THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

[REGISTERED AS A NEWSPAPER.]

VOL. XXXIV. No. 850.] LONDON, AUGUST 26, 1879. [31ST YEAR.] Price 6d.

GAS PURIFICATION
BY
OXIDE OF IRON.

COOKE BROS.,
CENTRAL DEPÔTS:
CO. DONEGAL, IRELAND;
LONDON DEPÔT:
BLACKWALL, E.;
OFFICES:
26, 27, & 28, FENCHURCH ST.,
LONDON, E.C.

GENUINE TORBAY
PAINT
Resists Sulphuretted Hydrogen. Does not Blister, Crack, or Flake off. Has very large surfacing powers.
THE TORBAY PAINT COMPANY,
(PROPRIETORS) STEVENS & CO.,
21, Great Winchester St., London, E.C.
Works: BRIXHAM, DEVON.

THOMAS PROUD,
BROOKFIELD GAS APPARATUS WORKS,
108, ICKNIELD STREET EAST, BIRMINGHAM.
CONTRACTOR FOR
LAYING MAINS
FOR
Gas, Water, & Sanitary Purposes,
AND MANUFACTURER OF
WOOD GRIDS
FOR
SCRUBBERS AND PURIFIERS.

COWEN'S PATENT FIRE-CLAY RETORTS.
JOSEPH COWEN and CO.,
BLAYDON BURN, BLAYDON-ON-TYNE,
Were the only parties to whom a PRIZE MEDAL was awarded at the GREAT EXHIBITION of 1851, for "GAS-RETORTS and OTHER OBJECTS in FIRE-CLAY," and they were also awarded at the INTERNATIONAL EXHIBITION of 1862, the PRIZE MEDAL for "GAS-RETORTS, FIRE-BRICKS, &c., for EXCELLENCE of QUALITY."
J. C. and Co. have been for many years the most extensive Manufacturers of Fire-Clay Retorts and Fire-Bricks in the Kingdom. Orders for Fire-Clay Retorts of all shapes and dimensions, and to fit any shaped Mouthpiece, Fire-Bricks, and every other article in Fire-Clay, are promptly executed at their Works as above.
COWEN'S GARESFIELD COALS.
JOS. COWEN & CO. are the only Manufacturers of FIRE-BRICKS and CLAY RETORTS at BLAYDON BURN.

JOHN RUSSELL & CO.,
LIMITED,
Established at the commencement of Gas Lighting,
MANUFACTURERS OF
TUBES AND FITTINGS.
THREE PRIZE MEDALS,
Paris, 1878.
HEAD LONDON OFFICE:
145, QUEEN VICTORIA STREET.
ALMA TUBE-WORKS, WALSALL;
OLD PATENT TUBE-WORKS, WEDNESBURY.

JOHN BENT & SON,
BELL BARN ROAD, BIRMINGHAM,
MANUFACTURERS OF
WET AND DRY GAS-METERS,
LICENSEES AND MANUFACTURERS OF
HUNTS
PATENT COMPENSATING METERS,
STREET-LAMPS, &c., &c.
ESTABLISHED 1830.

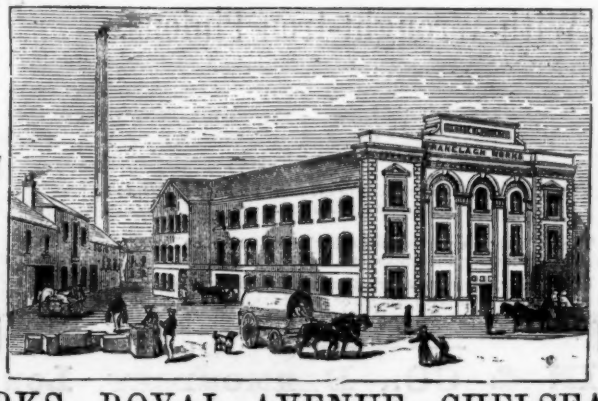
THOMAS PIGGOTT & CO.,
SPRING HILL, BIRMINGHAM,
MANUFACTURERS OF
TELESCOPIC & SINGLE GASHOLDERS,
CAST & WROUGHT IRON TANKS FOR DITTO,
And Gas Apparatus of every Description.
Marine, Tubular, Cornish, Plain, Furnace, Saddle, and Range Boilers.
SUGAR, SALTPETRE, AND ALL KINDS OF PANS.
Roofs, Girders, and Bridges, and General Smith's Work.
London Offices: 97, CANNON STREET.—
JAMES E. & SAMUEL SPENCER, Agents.

THE
"OTTO" GAS-ENGINE.
See Advertisement in last week's JOURNAL, page 278.

CROSSLEY BROTHERS,
MANCHESTER AND LONDON.

THE
NITSHILL COMPANY'S
DUKE OF HAMILTON'S
LESMAHAGOW
CANNEL COAL.
AGENT:
JAMES M'KELVIE,
HAYMARKET,
EDINBURGH.

CHANGE OF ADDRESS.
GEORGE GLOVER AND CO.,
DRY GAS-METER MANUFACTURERS,
HAVE REMOVED TO MORE EXTENSIVE PREMISES:



RANELAGH WORKS, ROYAL AVENUE, CHELSEA, LONDON, S.W.

LAMBERT BROTHERS, WALSALL.

ALPHA TUBE & FITTING WORKS

Manufacturers of **W. J. WARNER'S PATENT MARKET GAS STAND-PIPE.**

Now ready, GAS CHANDELIER BOOK (Reduced Prices), 7s. 6d.

THE WIGAN COAL & IRON COMPANY,

LIMITED,

DISTRICT OFFICE: 97, NEW STREET, BIRMINGHAM; AGENT: W. M'GOWAN,

Supply the Best Wigan Arley Mine Gas Coal, Gas Nuts, Gas Cannel, &c.

N.B.—The Wigan Coal and Iron Company, Limited, are exclusive owners of the well-known HAIGH HALL AND KIRKLESS HALL GAS COAL COLLIERIES.

HONOURABLE MENTION, # J. E. WILLIAMS & CO., **PARIS EXHIBITION, 78.**

SOLE MANUFACTURERS OF THE

SPECIAL METALLIC OXIDE PAINT,

Largely used by Gas Companies, Corporations, Railway Companies, Ironfounders, and Machinists. It has the following qualifications and properties:—

EFFECTUALLY PREVENTS AND ARRESTS CORROSION.
HAS A FINE GLOSS, AND IS VERY DURABLE.
DOES NOT REQUIRE DRIERS LIKE OTHER PAINTS.
PROTECTS IRON FROM ACTION OF WATER.

IS NOT AFFECTED BY SULPHURETTED HYDROGEN.
FORMS A VERY HARD TOUGH (NOT BRITTLE) SURFACE.
WILL NOT CRACK, BLISTER, OR SCALE.
IS NOT AFFECTED BY EXTREMES OF TEMPERATURE.

COVERS NEARLY DOUBLE THE AREA OF OTHER PAINTS.
(7 gallons or 1 cwt. will cover 1211 square yards of Ironwork.)
IS CHEAPER AND MORE ECONOMICAL THAN ANY OTHER.

VICTORIA PAINT WORKS, COLLYHURST, MANCHESTER.

WELLINGTON TUBE WORKS,

GREAT BRIDGE, TIPTON, STAFFORDSHIRE.

JOSEPH AIRD,

GAS, STEAM, AND HYDRAULIC TUBES AND FITTINGS.

FLETCHER AND MURPHY,

GARRATT STREET WORKS, OLDHAM ROAD, MANCHESTER;

Manufacturers of

IMPROVED CONSUMERS WET GAS-METERS

IN CAST-IRON CASES,

THE UNVARYING WATER-LINE GAS-METER,

AND

IMPROVED DRY GAS-METERS;

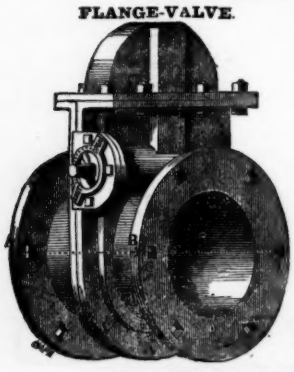
STATION-METERS OF ALL SIZES, with PLANED JOINTS;

GOVERNORS, PRESSURE AND EXHAUST REGISTERS, TEST HOLDERS.

And all kinds of Experimental Gas Apparatus.

IMPROVED GAS-VALVES

FLANGE-VALVE.



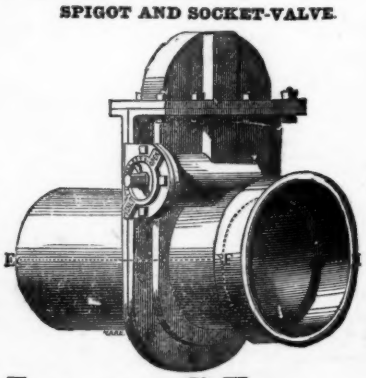
With Wrought-Iron Pinions.

List of Prices, with dimensions of all Sizes up to 48 inches, to be had on application.

These Valves are proved on both sides to 30 lbs. on the square inch before leaving the works, and are kept in stock.

In ordering, please state whether required for under or above ground, and if to be with flanges or spigots and sockets cast on, or with separate spigot and socket-pieces.

SPIGOT AND SOCKET-VALVE.



B. DONKIN & CO., BERMONDSEY, LONDON, S.E.

Also Makers of Steam-Engines, Beale's Exhausters, Water-Valves, &c.

HYDRATED PURIFYING MATERIAL.

Samples on application.

MESSRS. SPENCE BROS., LIMITED,

Will be glad to supply the above on the most favourable terms, and to treat, by Purchase or Exchange, for Spent Oxide.

PRICES ON APPLICATION.

ALSO PATENT DRY COPPERAS FOR EXTRACTING AMMONIA.

VICTORIA CHEMICAL WORKS, BRADFORD, NEAR MANCHESTER.

IMPROVED HYDRAULIC CRANES,

Effecting a great saving in the cost of discharging Coals from Vessels, Barges, &c. Several of these Cranes, with the necessary power, are now being erected at Beckton, Hull, and other Gas-Works.

HYDRAULIC APPARATUS for Lifting and Lowering Purifier-Covers.

Sixteen recently erected at Beckton, applied to Covers 30 feet square.

SULPHATE OF AMMONIA APPARATUS,

IN SUCCESSFUL OPERATION AT THE NEW WORKS OF THE NEWCASTLE AND GATESHEAD GAS COMPANY, AND IN COURSE OF ERECTION AT THE CARLISLE CORPORATION GAS-WORKS.

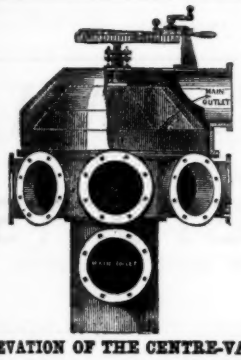
Special "REGULUS COCKS" manufactured to stand Acid.

FOR PARTICULARS, APPLY TO

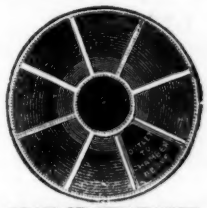
JOHN ABBOT & CO., LIMITED,

2, SUFFOLK LANE, CANNON STREET, E.C., or PARK WORKS, GATESHEAD-ON-TYNE.

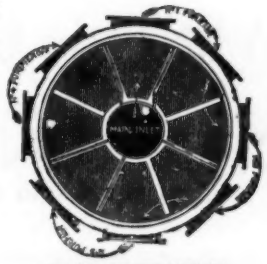
C. & W. WALKERS'
PATENT CENTRE-VALVES.



ELEVATION OF THE CENTRE-VALVE.



PLAN OF THE VALVE.



PLAN OF THE BODY.

These PATENT CENTRE-VALVES are the most perfect and certain means for working Purifiers on the system of three in action, and one out of action. The Valve itself is protected from all injury inside the safety cover. The working of the Valve is so easy, and so governed by the stop-catch movement, that the Purifiers can be instantaneously changed in the dark as well as in daylight. They are scraped perfectly true, metal to metal, the facings heretofore exposed are always covered, and there is nothing more reliable, certain, and durable in a gas-works. By their use the floor of the Purifying-house is clear and level; the Valve and all connexions being beneath the floor, out of the way of working. A considerable improvement and saving is effected in the cost of the connecting-pipes.

MIDLAND IRON-WORKS, DONNINGTON, near NEWPORT, SHROPSHIRE; 8, FINSBURY CIRCUS, LONDON.

WILLEY & COMPANY,

GAS ENGINEERS,

WORKS: COMMERCIAL ROAD, EXETER,

INVITE THE ATTENTION OF GAS COMPANIES AND OTHERS FOR THE SUPPLY OF

EVERY DESCRIPTION OF GAS APPARATUS.

ENGINEERING DEPARTMENT.

NEW GAS-WORKS erected complete. Plans and Estimates furnished. MAINS, METERS, SERVICES, LAMPS, &c., adapted for Towns of any size. Gas Companies advised on Improvements, Extensions, and Alterations of Works.

GASHOLDERS AND TANKS.

RETORTS and RETORT-HOUSE FITTINGS, CONDENSERS, SCRUBBERS, ENGINES and EXHAUSTERS, PURIFIERS, STATION-METERS, GOVERNORS, VALVES, &c.

METER DEPARTMENT.

They beg special attention to the excellence and superiority of their WET and DRY METERS, several thousand being now in use by many of the largest Gas Companies in the West of England and South Wales. Warranted to measure correctly, and not to vary. Their acknowledged superiority has brought them into general use more rapidly than any Meters hitherto manufactured. A guarantee of Five years tendered with each Meter.

GAS-FITTING DEPARTMENT.

An extensive variety of Choice Designs in CHANDELIERS, PENDANTS, BRACKETS, STAR and SUN LIGHTS, MEDIÆVAL FITTINGS for CHURCHES, &c.

PATTERN-BOOKS and PRICE LISTS furnished.

☞ PLEASE NOTE THE ADDRESS–

GAS ENGINEERING WORKS, COMMERCIAL ROAD, EXETER.

GAS PURIFICATION
BY
OXIDE OF IRON.
GAS PURIFICATION & CHEMICAL Co., LIMITED,
PALMERSTON BUILDINGS, OLD BROAD STREET, LONDON, E.C.

JOHN WM. O'NEILL, Managing Director.

MESSRS. NEWTON, CHAMBERS, & CO.,
THORNCLIFFE IRON-WORKS, NEAR SHEFFIELD,

MANUFACTURERS OF

IMPROVED CENTRE-VALVES,
PURIFIERS, CONDENSERS, SCRUBBERS, GASHOLDERS, ROOFS,

And every description of Gas Machinery.

TENDERS GIVEN FOR WORK FIXED COMPLETE IN ANY PART OF THE KINGDOM.

WEST'S GAS IMPROVEMENT COMPANY,
LIMITED,

ARE NOW PREPARED TO SUPPLY AND ERECT THEIR PATENTED MACHINERY FOR

CHARGING AND DRAWING GAS-RETORTS,
And to enter into arrangements with GAS COMPANIES for its use upon moderate terms of Royalty.

The Patented Machinery has secured the approbation of all Engineers who have visited the MAIDSTONE GAS-WORKS, *where it is in full operation, and may be inspected at any time on application to the Manager.*

The advantages attending its use are—

INCREASED VOLUME OF GAS PER TON.—INCREASED YIELD PER RETORT.—INCREASED BULK OF COKE FOR SALE.—REDUCTION IN LABOUR AND LESS DEPENDENCE ON SKILLED STOKERS.

A Pamphlet containing a description of the Machinery, and Copies of Reports on the working of the same, &c., will be forwarded on application to the MANAGING DIRECTOR, Maidstone. Communications may also be addressed to the Consulting Engineer, R. P. SPICE, Esq., M. Inst. C.E., 21, Parliament Street, London, S.W., or to the Engineer and Analyst, F. W. HARTLEY, Esq., A. Inst. C.E., 55, Millbank Street, London, S.W.

EDWARD COCKEY & SONS,
GAS ENGINEERS, FROME SELWOOD,
MANUFACTURERS OF ALL DESCRIPTIONS OF

APPARATUS CONNECTED WITH GAS-WORKS.
THE ORIGINAL PATENTEES AND MANUFACTURERS OF THE

DRY-FACED VALVES
FOR PURIFIERS, GASHOLDERS, BYE-PASS, AND OTHER ARRANGEMENTS REQUIRING VALVES IN GAS-WORKS.

The Faced Valves, as made by the Patentees, continue to give great satisfaction, and they are being used extensively by many of the best gas engineers of the day.

They are more easily repaired than any other kind of Valve in use, and can be re-ground in a few hours without removal, and made perfectly gas-tight.

References can be given to many Engineers of high standing, who will testify as to the favour in which they are held.

MANUFACTURERS ALSO OF SUPERIOR WOOD GRIDS FOR PURIFIERS, SCRUBBERS, &c.

GEORGE ORME & CO.,

ATLAS METER-WORKS, OLDHAM,

MANUFACTURERS OF

WET AND DRY GAS-METERS,

STATION-METERS, GOVERNORS,

PRESSURE AND EXHAUST REGISTERS,

LAMP-METERS IN CAST-IRON BOXES,

And every Description of Gas Apparatus.

JAMES MILNE & SON,

GAS ENGINEERS,

Gas-Meter, Gas Apparatus, and Gas-Fittings Manufacturers,

EDINBURGH, AND

2, KING EDWARD STREET,

NEWGATE STREET, LONDON.

Meter Works in London—2, CROSS STREET, WILDERNESS ROW, E.C.

STATION-METERS GOVERNORS, CONSUMERS METERS, GAS LUSTRES, CHANDELIERS, BRACKETS, &c.,

And every description of Gas-Fittings and Gas Apparatus.

LONDONDERRY GAS COALS

DIRECT FROM THE

MARQUESS OF LONDONDERRY'S COLLIERIES.

COUNTY OF DURHAM.

For Prices and Particulars, apply to

MR. S. J. DITCHFIELD,

LONDONDERRY OFFICES, SEAHAM HARBOUR, COUNTY OF DURHAM.

London Agents: Messrs. LAMBERT BROS., 85, GRACECHURCH ST., E.C.

JOHN HALL AND CO., STOURBRIDGE,

Manufacturers of FIRE-BRICKS, LUMPS, TILES,

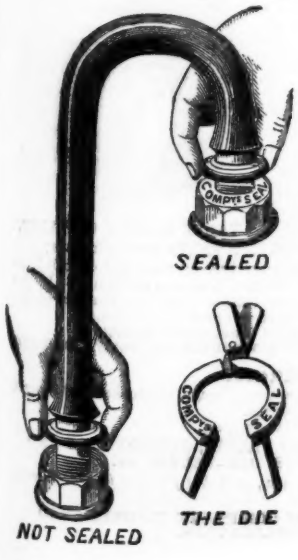
AND EVERY DESCRIPTION OF FIRE-CLAY GOODS.

N.B.—A Stock of 15 and 16 in. CIRCULAR RETORTS always on hand. Other kinds made to order on short Notice.

FOULGER'S PATENT

COUNTER-SUNK SEAL GAS-METER UNIONS,

As Supplied to The Gaslight and Coke Company.



These Unions practically place a Gas Company's property under lock and key, by rendering it impossible to disconnect at any joint at which gas could be obtained unregistered, without destroying the Company's seal or signature, whilst a small cover absolutely protects the impression from accidental injury.

A meter having been fixed with one of these Unions on the main-cock, and another on the inlet, a few pinches of specially prepared crushed sealing-wax is placed in the cup, and being melted with a blow-pipe, the wax runs between the reversed threads, the circular tong-shaped die will then give a sharp impression of the Gas Company's title, an operation requiring about two minutes in all to perform.

If heat is applied for the purpose of unsoldering the joints, the wax is instantly fused, and the impression, of course, lost.

Are supplied in all sizes, either as Caps and Linings or Barrel-Unions, and at a small additional cost over existing connections.

For further Particulars, Samples, &c., apply to the Sole Agents,

WIGGINS & RIHLL,

VICTORIA DOCK ROAD, LONDON, E.

C. & W. WALKER'S

WOOD PURIFIER SIEVES,

Which have now been used for fifteen years, and their advantages and durability fully established. They are made entirely by steam machinery in very large quantities at the most moderate cost.

MIDLAND IRON-WORKS,

DONNINGTON, NEAR NEWPORT, SHROPSHIRE.

FINSBURY CIRCUS, LONDON.

SWANWICK CANNEL.

Illuminating power, 24 candles. Good Coke, 11¼ cwt. to the ton.

For analysis, prices, and references, apply to

H. BOAM, Litchurch Villa, DERBY.

ESTABLISHED IN 1860.

BENJAMIN CARPENTER,

THE ORIGINAL MANUFACTURER OF THE IMPROVED

WOOD SIEVES

FOR

GAS PURIFIERS & SCRUBBERS.

PROVIDENCE WORKS,

22, HERMES STREET, PENTONVILLE ROAD,

LONDON, N.

The Dunston Engine Works Co.,

GATESHEAD-UPON-TYNE.

Are the Sole Manufacturers of

Archer's Patent Hoists,

ALSO OF

Archer's Patent Stone Breaker,

AND OF

Archer's Patent Ore Crusher & Pulveriser,

The last-named Machine (without the Pulveriser) makes the best and most durable Coke Breaker.

TO GAS COMPANIES.

GEORGE McKAIG,

MANUFACTURER OF

GAS-PURIFYING WOOD SIEVES,

153, CLEVELAND STREET,

DONCASTER.

It requires but one trial to prove the Superior Make, Strength, and Durability of these Sieves.

CARRIAGE PAID.

GRIRDROD'S PATENT

PORTABLE PIPE SCREWING MACHINE,

For 1 in., 1¼ in., 1½ in., and 2 in. Gas Threads, complete £7 10s.

In use at the chief gas-works, and giving great satisfaction.

For other useful goods, see Bailey's "Illustrated Inventions," post free 3s. 6d.; gratis to ledger customers.

W. H. BAILEY & CO.,

Brassfounders, Gauge Injector and Tool Makers,

ALBION WORKS, SALFORD,

LANCASHIRE.

Gold Medal Awarded, Paris Exhibition, 1878.

THOMAS TURTON AND SONS,

SHEAF AND SPRING WORKS,

SHEFFIELD,

MANUFACTURERS OF

FILES OF BEST QUALITY

FOR ENGINEERS,

STEEL OF ALL DESCRIPTIONS,

SCREW STOCKS, TAPS, AND DIES, SPANNERS, RATCHET BRACES, LIFTING-JACKS, ANVILS, VICES,

AND ENGINEERS TOOLS GENERALLY.

LONDON OFFICE:

80, CANNON STREET, E.C.

T. NEWBIGGING,

CONSULTING GAS ENGINEER

5, NORFOLK STREET, MANCHESTER.

Established 1799.

ROBERTSONS & CO.,

TWEED IRON-WORKS,

BERWICK-UPON-TWEED.

Makers of Socket, Flange, and Hot-Water Pipes, Tank-Plates, Lamp-Posts, Columns, Girders, and Gas and other Castings.

THOMAS CARR & SON,

MANUFACTURERS OF

FIRE-BRICKS, LUMPS, TILES, RETORTS, &c.,

COTSWOOD FIRE-BRICK WORKS, SCOTSWOOD-ON-TYNE.

Also Makers of all kinds of Common Building Bricks, and of Pressed White and Red Bricks for Facing.

BIRTLEY IRON WORKS,

CHESTER-LE-STREET, DURHAM.

Manufactory for every description of Casting and Machinery for Gas-Works and Water-Works.

Warehouse in London for Cast-Iron Pipes and Connexions of all sizes and in any quantity, Scott's Wharf, Bankside, Southwark.

Agent in London, Mr. J. MANWARING, 101 Cannon Street, E.C.

JAMES OAKES & CO.,

ALFRETON IRON-WORKS, DERBYSHIRE,

AND

WENLOCK IRON WHARF, 21 & 22, WHARF ROAD, CITY ROAD, LONDON, N.,

Manufacture and keep in stock at their works (also a large stock in London) PIPES and CONNECTIONS 1½ to 48 inches in diameter; and make to order Retorts, Purifiers, and Tanks, with or without planed joints, Columns, Girders, Special Castings, required by Gas, Water, Railway, Telegraph, Chemical, Colliery, and other Companies.

NOTE.—Syphons and Covers are joint-faced if required, doing away with millboard and iron boring, or Syphons made without Covers, a socket being cast on and fitted with a small plug about 6 inches in diameter with lead joint. In either way preventing leakage.

THE

SILICA FIRE-BRICK CO.,

OUGHTIBRIDGE

Near SHEFFIELD,

Manufacturers of THE ORIGINAL SILICA OR DINAS FIRE-BRICKS. Specially adapted for Gas-Retort Furnaces and for Siemens's Gas-Furnaces. Shipments promptly executed to London, Liverpool, Hull, Grimsby, &c.

TROTTER, HAINES, & CORBETT,

BRETTELL'S ESTATE

FIRE CLAY & BRICK WORKS,

STOURBRIDGE.

Manufacturers of GAS-RETORTS, GLASS-HOUSE FURNACE & BLAST-FURNACE BRICKS LUMPS, TILES, and every description of FIRE-BRICK.

Proprietors of

BEST GLASS-HOUSE POT and CRUCIBLE CLAYS.

SHIPMENTS PROMPTLY AND CAREFULLY EXECUTED.

HARPER & MOORES,

PROPRIETORS OF THE

BEST STOURBRIDGE CLAYS,

STOURBRIDGE.

Manufacturers of all Descriptions of

BEST STOURBRIDGE FIRE-BRICKS, LUMPS AND CLAY RETORTS

Of all Dimensions for Gas-Works,

GLASS-HOUSE POTS & CRUCIBLES

ESTABLISHED 1836.

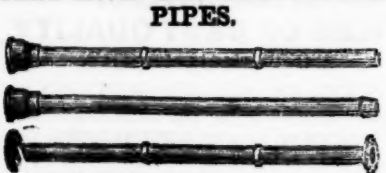
The Highest Award was obtained by H. & M., at the Philadelphia Exhibition, 1876, for Superior Quality of Manufacture. SILVER MEDAL, PARIS, 1878.

GAS AND WATER PIPES.

WILLIAM MACLEOD & CO.,

30, ST. ENOCH SQUARE, GLASGOW.

CAST-IRON GAS AND WATER PIPES.



DELIVERY F.O.B., GLASGOW.

Prices on application.

F. & C. OSLER,

45, OXFORD STREET, LONDON, W.

MANUFACTORY AND SHOW-ROOMS:

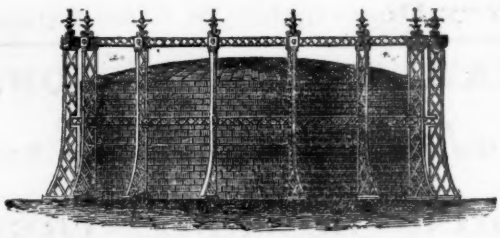
BROAD STREET, BIRMINGHAM.

ESTABLISHED 1807.

MANUFACTURERS OF CRYSTAL GLASS CHANDELIERS, WALL LIGHTS, AND LUSTRES FOR GAS AND CANDLES.

TABLE GLASS OF ALL KINDS.

CHANDELIERS IN BRONZE AND ORMOLU. MODERATOR LAMPS.



THE HORSELEY COMPANY,

LIMITED,

TIPTON, STAFFORDSHIRE.

LONDON OFFICE:

6, WESTMINSTER CHAMBERS, VICTORIA STREET,

GAS ENGINEERS, IRONFOUNDERS, &c.,

MANUFACTURERS OF

GASHOLDERS, WROUGHT AND CAST IRON TANKS, CONDENSERS, PURIFIERS, SCRUBBERS, MAINS, RETORT-LIDS, PLAIN AND DISHED, LAMP-POSTS, PIPES,

AND ALL REQUISITES FOR EITHER

GAS OR WATER WORKS;

ALSO

MAKERS OF ROOFS, BRIDGES, &c.

S. OWENS & CO.,

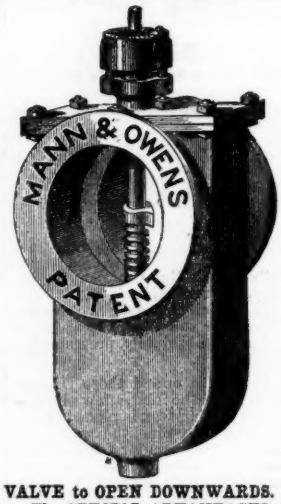
HYDRAULIC, GAS, AND GENERAL ENGINEERS,

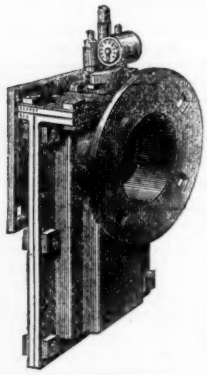
WHITEFRIARS STREET, LONDON, E.C.

Sole Manufacturers of MANN & OWENS'

PATENT SCREW & CAM GAS-VALVE,

Protected by Royal Letters Patent in England, France, Belgium, & the United States of America.





BRIDGE-VALVE for Regulating the Seal of Hydraulic Mains.

VALVE to OPEN DOWNWARDS.

VALVE to OPEN UPWARDS.

The SPECIAL ADVANTAGES of MANN AND OWENS' PATENT VALVE are as follows:—

1. Its non-liability to become set fast through varying temperature or from the deposit from crude gas. 2. It is made absolutely gas-tight by the simple action of a screw and cam. 3. Inconvenience through the breakage of springs or wedges setting fast cannot arise. 4. The face of the Valve is scraped and cleaned of any solid matter at each operation of opening or closing.

The Valve can be had to work either in a Vertical or Horizontal position.

Every Valve is carefully tested under pressure, and warranted perfectly sound and gas-tight.

INSTRUCTIONS FOR ORDERING.

State whether required for above or below ground, if Double Flange or Socket and Spigot Valves are wanted, or with loose Flanged Socket and Spigot pieces.

The Prices include Indicators to show extent to which Valve is open.

Also makers of PILLAR-VALVES, SELF-ACTING BYE-PASS VALVES, OUTSIDE RACK AND PINION VALVES, HYDRAULIC-MAIN VALVES, DISC-VALVES, &c.

Every description of Pumping Apparatus, Hydraulic Lifts, &c., suitable for use in Gas-Works, made to order.

PRICES, SIZES, AND FULL PARTICULARS, WITH COMPLETE ILLUSTRATED CATALOGUE, FURNISHED ON APPLICATION.

TANGYE BROTHERS AND HOLMAN,

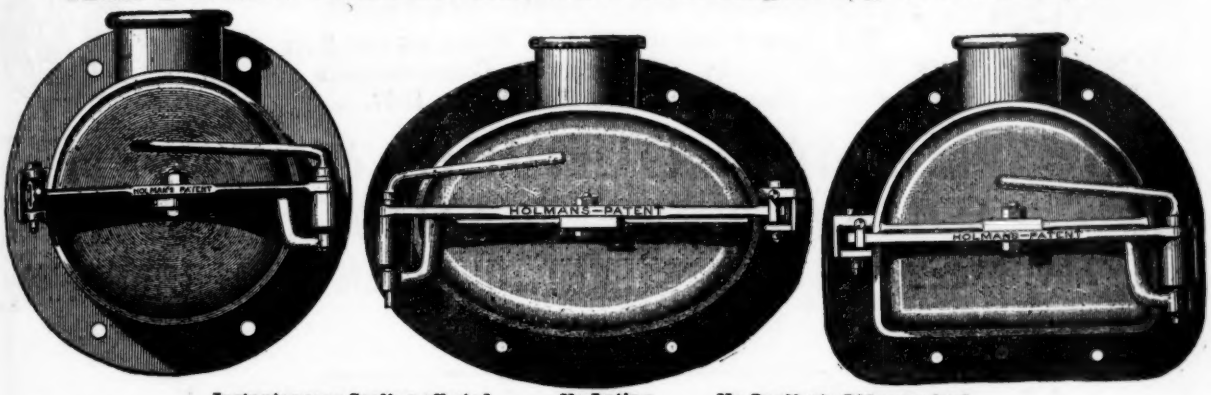
CORNWALL HOUSE, 35, QUEEN VICTORIA STREET, LONDON, E.C.,

(LATE OF 10, LAURENCE POUNTNEY LANE.)

SOLE MAKERS OF MORTON'S PATENT SELF-SEALING RETORT-LIDS

WITH HOLMAN'S PATENT ECCENTRIC FASTENINGS,

Anti-Friction Catches, and New Self-Adjusting Cross-Bars.



Instantaneous Sealing effected. No Luting. No Duplicate Lids required.
Holman's New Self-Sustaining Cross-Bar ensures freedom of Joint, and maintains parallel position of the Lids.

Since their introduction in 1869, these Patent Retort-Lids have been thoroughly tested, being now in use in nearly all the principal Gas-Works in London and the Provinces.

T. T. and H. are now making the "Morton's Self-Sealing Lid" of the SAME FORM OR SECTION AS THE RETORT (see Illustrations above), as well as bringing the Mouthpiece from the D or Oval at back to Circular in front, as heretofore.

D and Oval Morton's Lids are working satisfactorily both in this country, on the Continent, and in the United States of America. Among others they have been adopted by the following Gas-Works:—

The Gaslight Company's Works, Fulham; Ditto, Bromley-by-Bow; Ditto, King's Cross; Ditto, Shoreditch.
And also in the Gas-Works at Richmond, Maidstone, Gloucester, Glasgow, Portsea, Roubaix (France), The Hague (Holland

HUNT'S PATENT EQUILIBRIUM GAS-GOVERNOR.

In this Governor a Throttle-Valve is substituted for the ordinary suspended Cone, all external communications being avoided by placing the Lever or Radius Arm (shown in the drawing) inside the Valve-Chamber upon the Disc. The Disc is carried upon steel centres, upon which it is accurately balanced and turns freely. The friction in working is thereby reduced to a minimum. This Governor is extremely sensitive to alterations of inlet or outlet pressure, and renders a large actuating holder unnecessary.

The principal advantages of this arrangement over the ordinary form of Governor are as follows:—

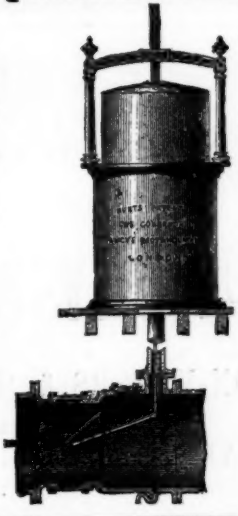
Its sensitive action prevents oscillation.

It is self-adjusting—*i.e.*, it maintains a steady pressure under variations of inlet pressure or a fluctuating consumption.

The inlet to Gasholder being contracted to the smallest possible dimensions, all danger from leakage through insufficiency of seal, tilting, &c., is entirely avoided.

The valve portion being separate from the holder, it can be handled and fixed like an ordinary Slide-Valve direct in the main; and the holder can be placed at an convenient distance immediately above it. The cost is thus materially reduced, and the inconvenience of heavy lifts done away with.

There are no working parts likely to get out of order.



These Governors have been adopted by many leading Gas Companies, among whom are the following:—

The Gaslight and Coke Co. (9), The London Gas Co. (3), and at Abergavenny, Arundel, Birmingham, Cannes (France), Devonport, Dursley, Exeter, Guernsey, Halesowen, Mentone (France), Monmouth, Newcastle-on-Tyne, Oxford, Plymouth, Rochdale, Windsor, &c.

TESTIMONIAL.

The Gaslight and Coke Company,
9, Water Street, New Bridge Street,
Blackfriars, E.C., Feb. 27, 1875.

MESSRS. TANGYE BROTHERS AND HOLMAN.

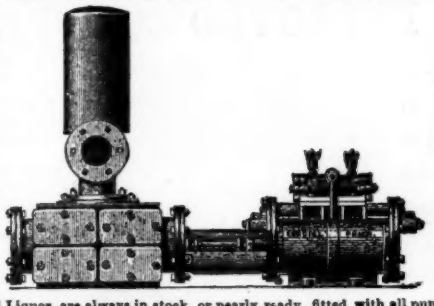
Gentlemen,—The two 24-inch and three 36-inch Hunt's Equilibrium Governors supplied by you, and fixed in the valve-rooms at Whitechapel, Goswell Road, and Blackfriars, are working very satisfactorily.

Yours truly,
(Signed) JOHN JOHNSON.

PRICES AND FULL PARTICULARS ON APPLICATION.

THE "SPECIAL" STEAM-PUMP.

Diameter of Steam Cylinder.	Diameter of Water Cylinder.	Length of Stroke.	Gallons of Water per Hour, Approximate.	Reduced Prices.
3	1¼	9	450	£16
4	2	9	815	18
5*	2¼	12	1,250*	21
5*	3	12	1,830*	22 10
4	4	12	3,250	25
6*	4	12	3,250*	30
5	5	12	5,070	32 10
7*	5	12	5,070*	40
6	6	12	7,330	40
8*	6	12	7,330*	50
7	7	12	9,750	50
10*	7	12	9,750*	65



In use in a Hundred Gas-Works in the United Kingdom for Pumping Ammoniacal Liquor, Water, or Tar.

Messrs. Burt, Boulton, and Haywood, Manufacturing Chemists, have over FORTY "Special" Steam-Pumps in use at their several large Tar-Works.

Two Hundred Sizes made. Those in Table opposite are the leading Sizes for use in Gas-Works and Chemical Works.

* These Sizes being usually selected for pumping Tar and Liquor, are always in stock, or nearly ready, fitted with all pump details in iron, and extra length distance-piece between steam and pump cylinder, at a small extra cost.

TANGYE'S HIGH-PRESSURE AND CONDENSING STEAM-ENGINES; CORNISH, VERTICAL, & TUBULAR BOILERS; HYDRAULIC AND SCREW LIFTING-JACKS, CRABS, PULLEY-BLOCKS, &c.

FULL PARTICULARS, ESTIMATES, CATALOGUES, ETC., ON APPLICATION.

London, 1851. New York. 1853. Paris, 1855. London. 1862.

Dublin, 1865.

The SIX MEDALS AWARDED to THOMAS GLOVER for

PATENT DRY GAS-METERS,

The latter being the Highest Medal awarded for Dry Gas-Meters by the Imperial Commissioners for the Universal Exhibition, Paris, 1867.

Paris, 1867.

THOMAS GLOVER & CO.,

DRY GAS-METER MANUFACTURERS,

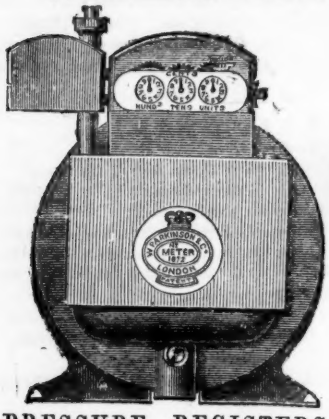
214 TO 222, ST. JOHN STREET, CLERKENWELL GREEN,

LONDON, E.C.

THOMAS GLOVER & CO.'S PATENT DRY GAS-METERS.

1st, Are a remedy for all the defects of Wet Meters;
2nd, Are suitable for all climates, whether hot or cold;
3rd, Incur no loss of Gas by evaporation;
4th, Cannot become fixed by frost, however severe;
5th, Are the most accurate and unvarying measurers of Gas;
6th, Prevent jumping or unexpected extinction of the Lights;
7th, May be fixed either above or below the level of the Lights;
8th, Cannot be tampered with, without visibly damaging the outer case;
9th, Will last much longer than Wet Meters;
10th, Will not cost more than one-half for repair that Wet or Water Meters do;
Are upheld for five years without charge.

WILLIAM PARKINSON AND CO.,



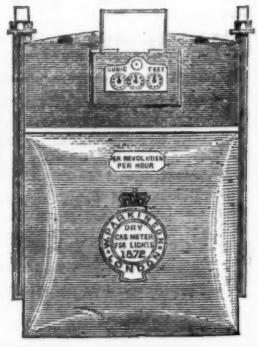
(ESTABLISHED 1816,)

MANUFACTURERS OF

WET & DRY METERS,

STATION-METERS & GOVERNORS,

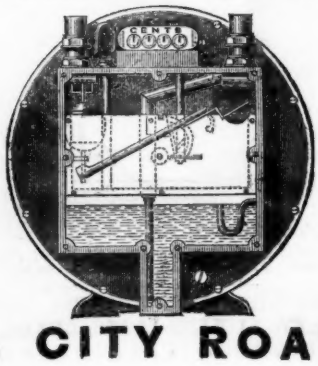
EXHAUSTER REGULATORS,



PRESSURE REGISTERS, EXPERIMENTAL APPARATUS, GAUGES, WATER-METERS, &c.

HUNT'S PATENT IMPROVED COMPENSATING METER.

In this Meter, the action of the measuring-drum is reversed. By this arrangement an improvement is effected in the registration at high speeds, which, in many tests, has not varied from the smallest light to three times the capacity of the meter. It works equally well under all pressures. The range of error between the high and low line is much smaller than that allowed by the "Sale of Gas Act."



The Meter has been critically tested, and most favourably reported upon by official Meter Inspectors in London and Birmingham.

W. PARKINSON and CO. have made arrangements for the manufacture of these Meters, both in tin and cast-iron cases, and for the alteration of old ones to this principle, which is confidently recommended as possessing every quality that can be desired by Gas Companies, Corporations, or Private Consumers.

COTTAGE LANE, CITY ROAD, LONDON, E.C.

CONTENTS.

Circular to Gas Companies:— PAGE

Prospects of Dividends for Metropolitan Gas Shareholders . . . 321
Bolton Corporation Gas Undertaking . . . 321
Bingley Improvement Commissioners Gas Supply . . . 321
Meeting of the Liverpool United Gas Company . . . 321
Meeting of the Wakefield Gas Company . . . 321
Meeting of the Cork Gas Consumers Company . . . 322
Meeting of the Bury St. Edmund's Gas Company . . . 322
Meeting of the Sevenoaks Gas Company . . . 322
Meeting of the Poole Gas Company . . . 322
A Concrete Tank for the New Gasholder at Carlisle . . . 322
Forthcoming Exhibition of Gas Apparatus at Nottingham . . . 322
North British Association of Gas Managers—Mr. Terrace on "Working Statistics" . . . 322
The late Mr. Laming . . . 322

Water and Sanitary Notes:—

Reported Outbreak of Cholera in Belgium . . . 323
"An Incredible Story"—The Lower Thames Valley Sewerage Scheme . . . 323
Carlisle Corporation Water Supply . . . 323
Opposition to the Liverpool (Vyrnwy) Water Scheme . . . 323
Meeting of the Sanitary Institute at Croydon . . . 324
Meeting of the Colne Valley Water-Works Company . . . 334

Leading Article:—

The Local Government Board . . . 324

Correspondence:—

The National Water Supply Exhibition at the Alexandra Palace . . . 326
Meter-Rents . . . 326

Legal Intelligence:—

South Shields County Court—South Shields Corporation v. South Shields Gas Company . . . 327
Lambeth Police Court—Opponents of a Constant Supply of Water to London . . . 327

Miscellaneous News:—

Reduction in the Price of Gas at Cardiff . . . 322
Imperial Continental Water Corporation . . . 322
Pontypridd Water-Works Company . . . 324
Aberavon Corporation Gas Supply . . . 324
Dorking Water Company . . . 324
Victoria Newmarket Gas Company, Limited . . . 324
Poole Water Supply . . . 324
The late Mr. Richard Laming . . . 326
Southern District Association of Gas Engineers and Managers . . . 326
Sale of the Llantrissant and Pontdown Gas-Works . . . 326
Proposed New Reservoir for the Bradford Corporation Water-Works . . . 326
Faversham Gas Company . . . 327
The Gas Supply of Berkhamstead . . . 327
Metropolis Water Supply . . . 328
South Essex Water Company . . . 328
The Local Government Board and the Metropolitan Water Companies . . . 328
Meeting of the Liverpool United Gaslight Company . . . 330
Meeting of the Wakefield Gas Company . . . 331
Meeting of the Cork Gas Consumers Company . . . 331
Reduction in the Price of Gas at Selby . . . 332
Meeting of the Bury St. Edmund's Gas Company . . . 332
Meeting of the Sevenoaks Gas Company . . . 333
Meeting of the Croydon Commercial Gas Company . . . 333
The Recent Gas Explosion at Croydon . . . 333
Meeting of the Town and County of Poole Gas and Coke Company . . . 334
Meeting of the Colne Valley Water Company . . . 334
Gas-lighted Buoys . . . 335
Association of Municipal and Sanitary Engineers and Surveyors . . . 335
Bolton Corporation Gas Supply . . . 335
Bingley Commissioners Gas Supply . . . 336
Extension of Storeage at the Carlisle Corporation Gas-Works . . . 336
Gas Undertakings and the Electric Light . . . 337
Trade Reports . . . 337
Kidsgrove Gas Company . . . 338
Normanton Gas Company . . . 338
Ilkeston Local Board Gas Supply . . . 338

TO CORRESPONDENTS.

No notice can be taken of anonymous communications. Whatever is intended for insertion, must be authenticated by the name and address of the writer; not necessarily for publication, but as a guarantee of good faith.

J. T. R.—*The Secretary of the Gas and Water Companies Association is Mr. William Livesey, of 6, Victoria Street, Westminster Abbey, S.W.*

H. L.—*Your letter, in its present form, is not suited for publication. When the invention, to which you refer, is made public on the issue of the specification, we shall be happy to notice it.*

THE JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, AUGUST 26, 1879.

Circular to Gas Companies.

It may not at this date be premature to speculate on the accounts which the Directors of the several Metropolitan Gas Companies will present to the Shareholders at the coming half-yearly meetings. We have said "speculate," but no speculation is necessary. We know that in each case a balance-sheet will be presented more favourable than the last, or that for the corresponding half of the previous year. The consumption of gas goes on increasing in the district of every Company, and with this continued progress the profits of the undertakings must necessarily keep pace. The past half year, we may take it, has been an exceptionally good one for all the Companies. Coals have been low in price, and residuals, we believe, have sold fairly well. The difficulties with coke, which so much affect the huge Chartered undertaking, do not beset the smaller Companies, who can for the most part find a ready sale, at a price, for the fuel. That price may not be always the one hoped for, and indeed justified by the cost of production; but coke must, if possible, be disposed of, and not allowed to accumulate. We do not, however, expect to find, in the reports of the Directors, many complaints of bad sales of coke. The value of other residuals varies but slightly, and the price of ammoniacal liquor may be found to have improved during the past half year. Taking the case of individual Companies, we may regard it as certain that those subject to the sliding scale—the South Metropolitan and the Commercial—will be fully able to maintain the increased dividend they are allowed to pay by virtue of its operation. For the rest, Companies situated like the Phœnix are sure to pay maximum dividends and have a good balance, while the Surrey Consumers Company must be in the same case, with their high price and increasing consumption. It is a great pity that the scheme for the absorption of this Company by the South Metropolitan Company cannot be carried into effect at once. The consumers in the latter Company's district would suffer little, if anything, from the combination, while their neighbours would gain considerable advantage. The London Company, too, are sure to pay full dividends, and still have a good balance.

The Corporation of Bolton have had a very successful year's working with their gas undertaking. Notwithstanding the depression of trade, which has been so general all over the North—and we may say, indeed, everywhere—the manufacture of gas continues to make rapid progress. All Corporations and Gas Companies have annually the same report to make—an increase in manufacture as compared with the previous year. So we hope it will continue to be. Bolton this year makes £36,375, which is distributed as follows:—Annuities, £14,460; interest on loans, £5068; sinking-fund, £883; renewal-fund, two and a half per cent. on the capital, £7864; district-rate, £8999. Of course, we naturally object to this last-named appropriation, and should have been better pleased to have seen the money applied in reduction of price. A question arose at the meeting of the Council, as to whether two and a half per cent. on the expended capital was not too much to set aside for a renewal-fund. The Bolton works appear to be maintained in a state of great efficiency, and do not require much outlay to keep them in that state. But it is said that mains in the district rapidly decay, and a great deal of money is required to renew them. Under these circumstances, two and a half per cent., although the amount looks large, is not too much for keeping the works and distributing apparatus in perfect repair.

The gas undertaking of the Bingley Improvement Commissioners, under the direction of Mr. G. D. Malam, is increasingly profitable. The unaccounted-for gas has, by the skill and energy of the Manager, been reduced so far that it now amounts to only 3·53 per cent. The working details show that 9627 cubic feet of 16¾-candle gas were obtained per ton of coal carbonized, of which 9288 cubic feet were sold. The profits made by the Commissioners amounted to £1986. After the payment of all the necessary charges, which include the liquidation of debts which were incurred when the undertaking was not so profitable as now, £600 remain to be devoted to the improvement rates. It will be seen from the above statement that the undertaking is in a very prosperous condition, and we are happy to see the Commissioners intend to give the consumers their share of the profits, by reducing the price of gas threepence per thousand feet. This is the way to promote consumption and increased revenue.

The Liverpool United Gas Company's half-yearly meeting was held on Tuesday last. It is unnecessary to say that maximum dividends are paid, and a large balance carried forward. We are happy to see the announcement that a reduction of price is to be made—twopence per thousand feet from the 30th of June last. This may perhaps put the Corporation in a better humour, and induce them to leave the Company alone. The demand for gas in Liverpool increases so fast that it has become necessary to make a considerable extension of the works at Linacre, in view of the requirements of the coming winter. We are glad to notice that at last the damages incurred by the burning of the landing-stage have been completely settled, and henceforward no item for that disastrous business will appear in the Company's accounts. For the rest, the proceedings of the Company only show a dead level of prosperity, which must be highly gratifying to all concerned, whether as Shareholders or Managers.

The Wakefield Gas Company have had a very satisfactory half year's working. Their business continues to increase; they have reduced the amount of unaccounted-for gas, and they also charge less than the standard price. Thus the sliding scale is brought into operation this half year, and

profits permitting, one per cent. is added to what we used to call the maximum dividends. A further reduction in price is announced, to take effect from the 1st of July last. While this will cause a diminished income to the Company to the extent of £750 for the half year—that is, at the present rate of business—we hope a largely increased sale and good prices for residuals will enable the Directors to add another extra one per cent. to the dividend next half year. We notice an unusual circumstance in connection with the meeting of this Company. The Shareholders have voted themselves a dinner after the next half-yearly meeting. We think they might well be content with the extra one per cent. they obtain under the sliding scale, and pay for their dinners directly out of their own pockets.

The twenty-first half-yearly meeting of the Cork Gas Consumers Company was held on the 12th inst. The report of the Directors, and a short abstract of the accounts, will be found in another column. The report possesses the usual agreeable feature, showing, as it does, the realization of profits admitting of the payment of their usual dividend of eight per cent. It is satisfactory to learn that the leakage is in a fair way of being reduced, as the service-pipes are being overhauled and re-laid. According to Mr. G. Anderson, the Company's Consulting Engineer, Cork must be rather an unsatisfactory city to supply with gas, and, after reading his account as to the underground conditions, we are only surprised that a great many explosions have not happened. The Company continue their efforts to promote the consumption of gas by the sale of cooking and heating stoves, and they are meeting with success, as they deserve to do. The Directors have been exhibiting gas in competition with the electric light, and would appear to have satisfied the people of Cork that one light may be made as brilliant as the other.

The Bury St. Edmund's Gas Company held their sixtieth half-yearly meeting on the 8th inst. Since the previous meeting the Company have obtained a new Act, which, of course, imposes upon them auction clauses and the sliding scale, which are expected to produce results most advantageous to the Company. Of course, if matters remain as they are—that is to say, if we are to have cheap coal and cheap iron, so that reductions may be made in price—dividends may be raised to amounts which will astonish people. Mr. Salmon, the Secretary, boldly prophesies that after a short time the Company will be the most prosperous in the kingdom. No doubt the affairs of the undertaking have been admirably managed, so as to bring about the result we notice to-day, and all concerned may be heartly congratulated.

The half-yearly meeting of the Sevenoaks Gas Company took place on the 15th inst. This, for a provincial Company, enjoys an exceptionally improving district, and the demand for gas is continually increasing. Last year the consumption of gas greatly exceeded that of the previous year, and, notwithstanding a reduction of price, the profits show an increase of £262. This is eminently satisfactory, and will encourage the Directors in continuing the policy they have now adopted. Considerable additions are being made to the works to meet the incessantly increasing demands for gas. We are glad to see that coke commands a ready sale at Sevenoaks, and that the manufacture of sulphate of ammonia is very profitable to the Company. We hope that everything is being done to encourage day consumption, but nothing is said concerning this in the report.

A single exception, and that but a small one, to the general prosperity of Gas Companies, presents itself in the case of the Town and County of Poole Gas and Coke Company, Limited. This Company are not able to pay out of current profits full dividends for the past half year, but a small draw upon the reserve-fund makes up the deficiency. The consumption of gas, however, goes on increasing in Poole, and it is likely that next half year the Directors may be able to declare full dividends, and restore the amount taken from the reserve-fund. It is a great pity that the wretched dispute about public lighting cannot be arranged with the Corporation; but, somehow or other, politics seem to have been mixed up with the question, which perhaps may render an arrangement hopeless until after the next general election. We are bound to say that, from what we read, the proposals of the Gas Company were quite reasonable, and it must be something more than the desire to promote the interests of the ratepayers which prompted the Town Council to reject the proposals of the Company. The average meter system, wherever it has been applied, has given universal satisfaction, and the Town Council would have been wise to have at once closed with the offer of the Company to adopt that system. What the Corporation lose in light by the adoption of petroleum lamps in the streets will be seen by the results of an experiment made to ascertain the comparative illuminating value of a petroleum lamp as used in the borough, and a lamp consuming four feet of gas per hour. In the former the light given was equal to 8⅓ standard candles, and in the latter 13½. Still, it is said in Poole that "Liberal Petroleum is better than "Tory Gas."

The Corporation of Carlisle have made a very important addition to their gas-works in the shape of a telescopic holder of two lifts, having a diameter of 120 feet, and 60 feet in height. The greatest novelty in this case is the construction of a concrete tank, under the direction of Mr. J. Hepworth, the Engineer to the Corporation. The situation, we may say, was evidently favourable for this kind of tank. The excavations were carried through 8 inches of soil, 2 ft. 3 in. of loam clay, 10 ft. 6 in. of gravel, and then reached the new red sandstone. A little trouble was occasioned by water, which was, however, kept under, and the tank was completed with the utmost success. We should like to have some more particulars of this work. It is the first concrete tank constructed in the North of England, and for this reason deserves notice. In the North there are many situations suitable for tanks of the kind, and the experience of Mr. Livesey and Mr. Hepworth will prove of great value to managers who undertake the construction of such tanks.

We are greatly pleased to see that the Gas Committee of the Corporation of Nottingham have resolved on having an exhibition of gas-engines, cooking-stoves, gas-burners, &c. Every display of this kind produces an immediate advantage to those who institute it, by directly promoting consumption. But these advantages are not confined to the locality in which the exhibition is held. They are experienced by Gas Companies in districts remote from the scene of the display, for visitors carry home with them a vivid recollection of what they have seen and heard, and we find cooking-stoves in districts where there is only a small Company supplying gas at a dear rate.

A very interesting paper, which we overlooked when referring to several other papers in our last "Circular," was read at the recent meeting of the North British Association of Gas Managers, by Mr. David Terrace, entitled "Working "Statistics." We quite agree with Mr. Terrace, that *per se* the indications of a station-meter are of very little value in estimating what may be called the good management of an undertaking. So many things require to be taken into consideration before it can be said that the production of gas is satisfactory, that we may regard the operation of the station-meter as delusive rather than satisfactory. If the coals are not always of the same quality, and even if they are, the quantity of gas obtained must necessarily vary. Little irregularities in the retort-house, which the manager, unless he is always on the spot and does the firing himself, cannot control, will also largely affect the results. Then, as Mr. Terrace says, the station-meters may be too small and overdriven; hence large errors in registration. So that it is really useless to attempt to draw any conclusions as to the good or bad working of undertakings from the registration of a station-meter. Nor can the working be determined by the modes of purification. So many circumstances affect the successful use of lime, that it is impossible to draw any conclusion from that part of the business. Mr. Terrace's paper was eminently suggestive, and provoked a most interesting discussion, which by no means exhausted the question. The best proposal made was that good management should be judged by the amount of gas per ton of coal carried to the consumers meters. That is an opinion we can cordially endorse.

We regret to learn that, owing to his long illness—he was confined to his bed for fourteen years—the late Mr. Laming was unable to make any provision for his family, who are left in straitened circumstances, and we are asked to publish an appeal on their behalf. There are many who must remember Mr. Laming, and many more who are acquainted with the facts of his life in connection with gas purification, and some of these may be willing to send contributions, which we shall gladly receive and acknowledge. An extract from a letter of Mrs. Laming's appears in another column.

Reduction in the Price of Gas at Cardiff.—The Directors of the Cardiff Gas Company have decided to reduce the price of gas 3d. per 1000 cubic feet, and also to reduce the charge for the public lamps 3s. per lamp per annum, the reduction to take effect from the 24th of June last. The price of gas, therefore, is now 3s. per 1000 feet.

Imperial Continental Water Corporation.—This Company, which was registered on the 6th inst., with a capital of £1,000,000, in £20 shares, is formed for the purpose of carrying on in the United Kingdom, the Continent of Europe, and elsewhere, the general business of a water company. Power is also taken to execute water-works, docks, canals, harbour and drainage works, and to reclaim, warp, fertilize, or irrigate land, and to enter into contracts for such purposes.

Water and Sanitary Notes.

An outbreak of cholera is reported in Belgium, and the disease is said to be prevalent in Ostend. If this be the case, the communications with that port and London are so frequent that it is difficult to see how the disease can be kept out of the Metropolis. The question which arises in our minds is, which Water Company is to be made responsible for the spread of the disease, supposing it arrives on our shores. The conditions present on this occasion may possibly resemble those which obtained at the last outbreak, when it was alleged that cholera stools thrown into the Lea at Bromley mysteriously found their way, against the current, and through a crack, into the reservoir of the East London Water Company. Supposing the disease should come, the earliest cases are tolerably certain to occur in the district of the East London Company. But, now that there is no crack in a reservoir, it will require all Mr. Netten Radcliffe's ingenuity to trace any connection between the spread of the disease, if an epidemic should occur, and the condition of the East London Company's water. Until an actual outbreak takes place in London, we shall not further speculate. If the disease be at all localized, a Water Company must be made the scapegoat; if it be general, we may possibly learn some facts regarding its origin and transmission.

In the course of Mr. Fawcett's recent speech in the House of Commons, and the subsequent discussion, a good deal was said about the necessity which exists for removing sewage from the upper reaches of the Thames, in order that a purer supply might be obtained for the use of the Metropolis. Little as we think of the dangers of sewage, when mixed with a large body of water which has a good flow, we may candidly admit that we should prefer to see sewage entirely excluded from the river. The law has decided that this desirable object shall be effected, and the Thames Conservancy Board, whose duty it is to see that the influx of sewage to the Thames is stopped, have made praiseworthy efforts to carry out the intentions of the Legislature. For example, they have sued the Vestry of Richmond for allowing their sewage to flow untreated into the river, and have obtained penalties upon paper; but Richmond sewage still continues to be discharged into the Thames. The Board next assailed the small Local Board of Hampton Wick, and sought to obtain penalties to the amount of £98,000. This was too much for a small district with an area of only 1350 acres, and a rateable value of about £11,000 a year. It would occupy too much space to recount here the numerous Local Government Board inquiries which have taken place with reference to the drainage of the Lower Thames Valley. We are certain that all the Boards concerned are sincerely desirous of keeping their sewage out of the river, if they only knew how; but there is the difficulty. What one proposed another opposed, and so the game went on until Hampton Wick suggested that a Joint Board should be formed to carry out the drainage of the valley from Hampton to London, omitting Brentford and Twickenham. An inquiry was, of course, held by an Inspector of the Local Government Board, and in the end the Central Authority sanctioned a scheme, which was subsequently confirmed by Parliament. It constituted a representative Board, elected by the various districts interested, and the selection of members was quickly made. It is only right to say that a very strong Board was constituted, containing among its members some of the most prominent inhabitants within the limits. From this point it might have been thought that everything would have gone well, but unfortunately with the constitution of the Board troubles began. The first step which they took was a very proper one. They advertised for plans for draining the district and treating the sewage. In reply to their appeal, they received no less than twenty-three plans from eighteen different engineers. To select from these was obviously a matter of difficulty. We may say that one involved a junction with the West Kent drainage system; another boldly proposed to take the sewage straight across the country to Littlehampton, and there turn it into the sea; a third—and this the last we need mention—proposed to collect the sewage on a site near Molesey, and there treat it partly by irrigation and partly by downward intermittent filtration. This was the scheme the Board decided upon carrying out, and now began their real troubles. For a sewage farm, land was, of course, necessary; and, to effectually carry out the scheme, water rights also were essential. To obtain these it was requisite to apply to Parliament. We shall not here say anything about the merits of the scheme chosen by the Joint Board; all that need be urged is that it was selected by a body of gentlemen whose *bona fides* could not be questioned, and who may be supposed to have been possessed of sufficient talent and skill to make a proper selection. A Bill was accordingly prepared and duly presented to Parliament, but in the meantime very strong opposition had grown up among neighbouring landowners and proprietors of villas in the neighbourhood of the farm proposed to be established. It may be said with truth that the strongest opposition came from the owners of the Sandown Park Estate, whose interests would not have been interfered with had the scheme been carried out. But they objected to it, and were strong in Parliament; hence the rejection of the Bill, without any inquiry, on its second reading. This unusual step has been followed by proceedings in Chancery to restrain the Board from paying the expenses incurred in promoting the Bill to which we have alluded. As the matter now stands, the members of the Joint Board are personally responsible for the expenditure (about £7000) incurred.

This is a simple history of what has happened to some who have honestly endeavoured to purify the sewage before it is discharged into the river. The small Local Board failures are alluded to above. That we now mention is the failure of the well-organized scheme which was brought into existence for the special purpose of dealing with the sewage of the Lower Thames Valley. We have said before that we should express no opinion as to the merits of the scheme selected by the Joint Board. Our readers know that we are not in love with sewage farms. We regard them as ineffective purifiers, and as a wasteful expenditure of the ratepayers money. These, however, are not the points to which we wish here to call particular attention. The grievance of the Board is that their scheme was peremptorily rejected without inquiry, and that the members have since been something like persecuted. We may take it that the Board at the present time are in a state of disorganization; but the Thames must be purified, and we may express a hope that the members will accept their defeat on the irrigation scheme, and that they will try some other which will excite less opposition. We take the history given above from a very telling pamphlet by Mr. T. J. Nelson, the Chairman of the Joint Board, in the form of a letter addressed to Earl Beaconsfield, K.G.*

The water supply of Carlisle came into the hands of the Corporation in the year 1866. When the works were taken over, the mains and services are said to have been in a very defective state, and the Corporation had to immediately expend a considerable sum in placing them in a better condition. They remained for some time, however, in a state far from satisfactory, and quite insufficient for the needs of Carlisle. When the present Engineer, Mr. J. Hepworth, was appointed, he set vigorously to work to replace small mains with larger ones, and to detect and stop waste. His efforts have been rewarded with much success. The first things that required attention were the services, which were notoriously defective. These have been almost entirely replaced, and stopcocks fixed on each, so that the officers of the Corporation are able to see at once whether the leakage occurs on the consumers premises or in the mains. At Carlisle it was found that a greater part of the leakage took place on consumers premises, while not a little water escaped from the mains. This, we are happy to say, is now being remedied. Whereas the quantity of water furnished was 40 gallons per head of the population per day, now only 24 gallons are required. The water-rate of Carlisle has more than doubled since 1866, and if no steps had been taken to check the waste, an enormous supply would have been required. The water-works of Carlisle are now, however, highly profitable, and the Corporation, we suspect, rejoice over the bargain they made, which at one time did not look very promising.

If the Navigation Commissioners of the Severn entertain mild objections to the designs of the Corporation of Liverpool, with respect to their water supply, the same can hardly be said of the Fisheries Board, who appear to have some very decided views on the question. How far the Liverpool scheme might interfere with the breeding of salmon, we are unable to say; but the Board seem to regard it as a serious matter. It is claimed by the Corporation of Liverpool that their plan, if carried out, would prevent floods; but, unfortunately, it is argued that the abolition of floods would be a great injury to the fisheries. All we know is that Liverpool is in want of water, and must have it from some source or other. The scheme now under consideration appears to have been well thought out, but, as we have said from the first, it is peculiarly liable to opposition from various quarters. The works to be

* "An Incredible Story, told in a Letter to the Right Hon. the Earl of Beaconsfield, K.G., Prime Minister." London: James Truscott and Son, 1879.

undertaken are of a prodigious character. An embankment eighty feet in height is to shut in a valley, and so constitute a reservoir of 23,200 acres, capable of holding 10,000 million gallons of water, from which Liverpool is, at first, to receive 20 millions per day, and years hence double that quantity. For the embankment which we have mentioned there is said by some to be an excellent foundation, while others report watercourses underneath. The parliamentary proceedings in connection with this Vyrnwy scheme will be of a most important character, and it may be that, after all, the Corporation of Liverpool will regret that they did not adopt a Lake scheme, or share with Manchester.

In about two months time "The Sanitary Institute of Great "Britain" will commence their sittings at Croydon. In connection with this, there is to be an exhibition of sanitary apparatus, appliances, and articles of domestic use and economy. The display will, of course, be new to the good people of Croydon, who will study some curious articles, the utility of which they will only conjecture. Several similar exhibitions have before been held under the auspices of the Institute, and no doubt a few tradesmen have been benefited by them; but what good has resulted to the general community we think it would be hard to say. We will, however, hope against hope that something of more interest and importance may turn up than is now to be found at the Alexandra Palace.

The Colne Valley Water Company are undergoing the usual experience of a new Company. They furnish excellent water over extensive and somewhat sparsely populated limits, and after having been in existence for about six years they have as yet no money to divide. The luxury of a dividend will, no doubt, come in time, when the Shareholders will have good reason to be satisfied with their investments.

Pontypridd Water-Works Company.—At the annual general meeting of this Company, held on Wednesday, the 20th inst., a dividend of 10 per cent. was declared on the past year's working.

Aberavon Corporation Gas Supply.—At the monthly meeting of the Aberavon Town Council, on Wednesday, the 13th inst., a recommendation made by the Gas Committee was adopted—viz., that next quarter reductions be made to consumers of gas at the following rates:—Accounts of under £5, a reduction of 2½ per cent.; £5 and under £10, 5 per cent.; £10 and under £20, 10 per cent.; £20 and upwards, 15 per cent.; if payment be made within 14 days after demand. Also that the cost of the public lamps be reduced 5s. per lamp. The Mayor (Mr. T. W. Jenkins), in moving the adoption of the report, said that, although they were giving the best of the bargain to the consumer, he felt they should also give the public some benefit, and they had fixed the amount of reduction at 5s. each for the public lamps. Bearing in mind the depreciation in plant, the Committee did not see their way to a further concession. The works were reported to be in fair working order.

Dorking Water Company.—The report of the Directors of the Dorking Water Company, which was to have been submitted to the half-yearly meeting of Shareholders on Saturday, the 16th inst. (but was held over in consequence of there not being a sufficient number present), stated that the net revenue for the half year ending June 30 last was £254 7s. 1d., the gross amount received having been £474 9s. 8d., and the expenditure, including £8 10s. 3d. for empties and abatements, £220 2s. 7d. At the commencement of the half year the debit of the profit and loss account was £37 5s.; but there was, on June 30, £123 7s. 1d. standing to its credit. The Directors expressed pleasure at being able to report that the Bill confirming their Provisional Order for increasing the capital of the Company and adding to the water supply of the town had received the Royal Assent, and the Directors would, therefore, have it in their power to enlarge the operations of the Company, if only the necessary additional capital were provided. Preliminary steps had been taken, so that the works could commence as soon as the means were forthcoming.

Victoria Newmarket Gas Company, Limited.—The fourteenth ordinary general meeting of this Company was held on Friday last—Mr. Robert Stephenson in the chair—when the Directors submitted to the Shareholders the statement of accounts and balance-sheet for the year ending the 31st of July. The net balance of profit available for dividend amounted to £1025 4s. 9d., and the Directors recommended that this should be appropriated in the following manner:—A dividend at the rate of 10 per cent. upon the ordinary and new shares of the Company, £670; to be taken to a reserve-fund account, £300; leaving the sum of £54 4s. 9d. to be carried forward to the next year's account. It was stated that the works and plant of the Company have been maintained in an efficient state, and important renewals made and paid for out of revenue. The Directors who retired were Messrs. George Pond, John White, and George J. Saich. The report was adopted, the retiring Directors and Auditor re-appointed, and the recommendation of the Directors as to the disposal of profits agreed to. Votes of thanks to the Chairman, and to the Manager and Secretary (Mr. Thomas Wilkinson), concluded the business of the meeting.

Poole Water Supply.—We hear, a local paper states, that the Water-Works Company of Poole intend applying to Parliament in the next session for powers to borrow additional capital for the extension of their works. The present capital of the Company amounts to £12,000, and they have a debenture debt of £2000. The Company at the present time are in a very prosperous state, and able to pay a dividend of 10 per cent. per annum, but the Directors find it necessary to extend their works, and this they cannot do under the borrowing powers of their present Act of Parliament. The water from the pumps in the town is excessively bad, and at almost every sitting of the Sanitary Committee of the Town Council, notices are being received by them from the Officer of Health, stating that the water from various wells is so impure as to demand that they be immediately closed. Indeed, so very impure does the water seem to be in all parts of the town, that it is evident in a short time the supply from the wells, for drinking purposes, must cease. This being the case, the inhabitants are obliged to accept the supply afforded by the Company, and yearly the demand on them becomes greater, hence the necessity of their acquiring more capital.

THE LOCAL GOVERNMENT BOARD.

According to the Annual Report of the Local Government Board, recently issued, the proportion of the loans in urban sanitary districts which have been raised for gas and water purposes is very large. The outstanding loans of the Urban Sanitary Authorities at the close of last year amounted to £46,184,028. Out of this sum, no less than £19,063,238 was due to the outlay in respect of water undertakings, and £9,427,346 in respect of gas undertakings, thus making a total of £28,490,584, representing about three-fifths of the total loan account. Of this sum of twenty-eight millions, more than one-half was made up by the gas and water loans of ten boroughs. Of these ten, Birmingham takes the lead with £3,342,326, followed by Leeds with £2,393,875, Liverpool with £2,302,168, and Bradford with £1,930,094. Nine of these boroughs have gas loans, and nine have water loans, the former amounting to £5,395,442, and the latter to £8,994,830. The other boroughs on the list besides those we have named are Huddersfield, Leicester, Halifax, Oldham, Rochdale, and Nottingham. The rateable value of the urban sanitary districts of England and Wales appears as £48,375,889. It will be seen that the margin left between the rateable value and the amount of the outstanding loans is not great. Another heavy transaction, like the gas and water loans of Birmingham, would throw the balance on the wrong side. The amount borrowed last year by the Urban Sanitary Authorities was £8,020,159, or as much as £3,764,190 in excess of the amount raised by these Authorities by way of loan during the preceding year, and nearly as much in excess of the annual average of the last three years. But these figures include loans sanctioned by Parliament, as well as those which are directly authorized by the Local Government Board.

Taking a general review of the case, the report now before us states there is no prospect that there will be any substantial diminution in the amounts of the loans raised by the Urban Sanitary Authorities for some years to come. These Authorities have large borrowing powers still in reserve, which they may be expected to exercise. But in estimating the past and prospective increase of these loans, we are reminded that they are incurred for permanent works, often creating large assets. Thus the loans incurred in the purchase of gas and water undertakings are considered to represent an apparent rather than a real increase in the burdens imposed on the ratepayers, who formerly paid to the Companies for gas and water the amounts which, after the undertakings have been purchased, they are called upon to pay to the Sanitary Authorities. In addition to the gas and water loans, there are others which are considered to operate in the same way—as, for instance, where markets are established, and where improvements have been effected for which private individuals will have to pay. Surplus lands will also lighten the cost where new streets are constructed or artizans dwellings erected. It is at the same time to be observed that the sanctions granted to Urban Sanitary Authorities by the Local Government Board (irrespective of local Acts) are less in amount by £1,323,900 than those granted in the previous year. This is said to arise chiefly from the exceptionally large loans sanctioned in that year, with respect to a scheme under the Artizans Dwellings Act of 1875, in Birmingham, the amount being as much as £1,000,000. Sanctions for loans to be raised by Rural Sanitary Authorities also continue to increase. The loans thus sanctioned in 1875 were £64,000; in 1876 they were nearly £76,000, followed by £137,000 in 1877, and £151,000 last year. In the same period the amount of the outstanding loans increased from £140,000 to £452,000. The loans thus granted in the rural districts are almost exclusively for works of primary sanitary importance, such as sewers and water-works, and in some instances hospitals.

A return already presented to Parliament is quoted in the report, showing that the Board have sanctioned the raising of loans by Urban Sanitary Authorities to the extent of £1,097,527 during the five years 1872-76, for the purpose of supplying water to their respective districts under the Public Health Acts of 1872 and 1875. Similar loans in the case of Rural Sanitary Authorities have been sanctioned to the extent of £92,868. It is also mentioned that sanction has been given to the raising of a loan of £50,000 by the West Kent Main Sewerage Board "for the purpose of providing "main sewers for a large and rapidly-increasing district "close to the Metropolis." A statement given in the report shows to some extent the borrowing powers obtained by Sanitary Authorities by application to Parliament, irrespective of the Local Government Board. During the last six sessions, the loans thus authorized have amounted to more than

£20,000,000, exclusive of the amounts required for the purchase of twenty-two gas and water undertakings, and the cost of the promotion of several local Acts. Borrowing powers are thus exercisable without the sanction of the Local Government Board, but the latter have certain powers of supervision, so as to guard against any departure from the terms on which the loans are authorized.

The number of private Bills relating to matters connected with sanitary and local government administration deposited with the Local Government Board last year, and on which it was necessary to make reports to Parliament, amounted to sixty-three. It is stated that in a large number of these Bills, the promoting Authorities and Companies had inserted clauses with a view to the acquisition of exclusive powers for the manufacture and supply of artificial light and heat obtained from illuminating and heating agents other than gas. In some of these cases, the promoters were already possessed of gas undertakings, while in others the intention was apparently to acquire and work the new monopoly in competition with existing Gas Companies. Many Authorities also sought for power to prohibit the occupation of newly-erected dwelling-houses, until after such houses had been inspected by the officers of the Local Authority, and certified to be properly completed in accordance with the requirements of the local bye-laws. Such a certificate, we may observe, would add immensely to the value of a house, and the system is one which, if properly carried out, would offer great protection to the public. It is to be regretted that Local Authorities permit houses to be erected and occupied which are miserably deficient in the matter of drainage. Inspection during the time of construction would be easy; but to examine every drain-pipe after the premises are declared ready for occupation, is a troublesome and costly affair, not very likely to be carried out.

In confirming schemes under the Artizans and Labourers Dwellings Improvement Act of 1875, the Board appear to have exercised considerable care and forethought. Two schemes are mentioned—one at Devonport and the other at Newcastle-on-Tyne. By the Devonport Order it was provided that when so much of the unhealthy area as contained one-third of the population of such area should have been cleared of buildings, no further clearance should be made until dwellings suitable for persons of the working class, and sufficient for the reception of those displaced, had been provided in the area or its vicinity. When such buildings have been provided, the clearance of the remainder of the unhealthy area will be subject to similar restrictions. The net expense of the Newcastle scheme, after deducting the proceeds of the re-sale of lands, is estimated at £18,300. In confirming these two schemes, the Local Government Board defined what portion of the lands included in them respectively should be taken to represent the unhealthy areas, and specified the purposes for which the lands outside such areas were included in the schemes. Such lands were included in the Newcastle scheme in order to provide accommodation for the families of the working class intended to be displaced in the unhealthy area. Having regard to the very large sums expected to be realized by the Local Authorities through the re-sale of lands under schemes of this kind, the Local Government Board feel it important to secure as far as practicable that the amounts derived from such sources shall be applied towards the repayment of the debts incurred in relation to the schemes, or in meeting other capital charges connected with them.

In describing the proceedings of the Board in connection with the Rivers Pollution Prevention Act of 1876, the report states that the summary presented must not be understood to represent all that is being done under the provisions of the Act. Proceedings can be taken in a county court to enforce the requirements of the Act in respect of any pollutions other than those from mines and manufactories, without any intervention on the part of the Local Government Board. "More-"over," says the report, "one of the most important objects "of the Act is the prevention of new pollutions; and we have "reason to believe that it has in this way had a material "influence in directing the attention of manufacturers and "others to the discovery of new processes of purification." The Board have also been enabled, by reference to the Act, to insist, with more stringency than would otherwise have been practicable, that effectual means should be taken to purify the sewage in all those cases where their sanction has been requisite for loans to execute sewerage works.

In that portion of the Blue-Book which treats of Metropolitan Water Supply, it is stated, in accordance with the report of Dr. Frankland, that the waters of the Thames and the Lea, as supplied by the Companies mains, were "much "more polluted during the year by organic matters than they "were in the year 1877." Of the Companies drawing their supply from the Thames, the Chelsea Company delivered the best water, and the Grand Junction the worst. Of the water drawn from the Lea, that supplied by the New River Company was much the best. The report of the Local Government Board, in discussing these statements, observes that "the relative purity or impurity of the water delivered by "the Companies which draw their supply from the Thames "and the Lea, depends chiefly upon the quantity of reservoir "space available for storeage, and subsequent subsidence and "filtration." It is further suggested on this point: "The "marked recent improvement which has taken place in the "quality of the water supplied by the Chelsea Company, "may probably be attributed to the reservoirs which have "recently been constructed by that Company, and to which "attention was drawn in our last report." This justifies the remark of Mr. Fawcett in the House of Commons, that certain water declared unwholesome by Dr. Frankland, owed its inferiority not so much to the source whence it was derived, as to the fact that it was badly stored and imperfectly filtered. The water of the Kent Company is pure in virtue of the "natural filtration" which it undergoes in percolating through great thicknesses of porous strata. If the Water Companies who take their supplies from the rivers imitate this process artificially, they gain a similar result. Dr. Frankland may still quarrel with the source, but the supply will be practically good, and it is not yet seen how the source is to be changed.

Colonel Bolton, the Water Examiner appointed under the Metropolis Water Act, 1871, shows in his report that the certified expenditure of the Companies on works and improvements during last year amounted to £168,741, and that considerable advance has been made in extending the constant supply to the Metropolis. Colonel Bolton lays down the rule that the rate of filtration of the Metropolitan water supply should not exceed two and a half gallons per square foot per hour, though he adds to this that "effectual filtration "is greatly facilitated by previous subsidence." The only Company that exceeds the foregoing rate is the Lambeth, and this Company is now constructing new and additional filters at Ditton, in order to secure slower filtration. During 1878, the Companies had to contend with a "generally very bad "state" of the water in the Thames and the Lea, owing to the prevalence of floods, the supply thus obtained being "extremely difficult to filter, the solid impurities in suspen-"sion being only practically got rid of by subsidence previous "to filtration." These remarks show in what direction the public may look for an improvement in the water supply. The character of the impurities is thus set forth by Colonel Bolton: "There was a large amount of solid matter in the "water, too fine to settle, the discoloration being caused by "the chalk, clay, and decayed and other vegetable impurities "carried down by the floods." The present year, like the last, must necessarily be a bad one for the rivers. Frequent floods will make the water turbid, but it is evidently in the power of the Companies to deliver the water in a wholesome state. In respect to quantity, it is a curious fact that the Southwark and Vauxhall Company drew from the Thames last year twenty per cent. more water than is allowed by law, the daily limit being 20,000,000 gallons. This Company gave the largest supply per head of any of the Companies, the ratio of its supply being nearly 43 gallons per head per day, while the general average was little more than 33 gallons. The Chelsea came next, with 39·3 gallons per head, the lowest being the West Middlesex, supplying less than 26 gallons. In the months of July and August, the Southwark Company supplied as much as 50 gallons per head per day. It is curious that the Company which gave this large allowance of water is wholly innocent of the constant supply, while the East London Company, which last year had extended the constant service to more than three-fourths of the houses in its district, gave a daily supply rather under the average. The Chelsea Company, which gives a large daily allowance, has extended the constant service to about 700 houses and factories, "though, judging by the absence of any applications "for such supplies," says Colonel Bolton, "there appears to "be no desire on the part of public authorities or private "individuals for constant service in this district." We notice at the close of Colonel Bolton's report an allusion to "the "effectual filtration and delivery of good water by the Com-"panies to their respective districts," accompanied by an expression of regret that "the supply frequently deteriorates "in the cisterns of the consumers."

The report of Mr. Allen Stoneham, the Auditor under the Metropolis Water Act of 1871, shows the total share and loan

capital of the Companies to be £12,070,132. The aggregate dividends for the year were approximately at the rate of £7 10s. per cent. on ordinary share capital, and £4 15s. on preference capital, the interest paid on loans being £4 5s. per cent. For the comfort of water-drinkers, and the satisfaction of the public, it should be stated that, despite the prevalence of floods and the consequent turbidity of the rivers, Dr. Frankland, aided by his microscope, detected "living and "moving organisms" in the London water on eight occasions only, whereas the average of nine previous years gives nearly sixteen. More striking still is the fact that no such organisms were found in the water of the Chelsea or the East London Companies. In fact, for the last four years the East London water has stood this test. Yet the public have been given to understand that the East London water is so bad that the people are thereby compelled to drink beer, which, although itself bad, is a shade better! In the water supplied by the West Middlesex Company, these living and moving organisms have only been found once in ten years. It is observable that these mysterious beings—whatever they may be—are only found in "the sediment" of the water. If they were diffused through the water independently of the sediment, we might expect to find them equally present in all cases where the source of the supply is the same. The West Middlesex, the Grand Junction, and the Southwark, all take their supply from the Thames at Hampton, yet the West Middlesex has no "organisms" for nine years in succession, while the others have, more or less, every year but one.

The "living and moving organisms" which have so alarmed some of our "scientific purists" evidently appertain to the sediment, and, when this is deposited, the supernatant water may be considered free from animal life. These organisms are undoubtedly minute, and indicate a degree of impurity which is shadowy in the extreme when compared with the state of the water as it comes from a neglected house cistern. We have reason to believe that some of the foulest water in London has been found in the cisterns of the Kent district, where the water supply is favoured with Dr. Frankland's kind approval for its purity. The data seem to show that if the water of the Thames and the Lea is delivered clear and bright, there are no "organisms" to be found, simply because there is no "sediment." Last year was the first in ten years in which the water supplied by the West Middlesex Company was found to be turbid, though even then it was only "slightly "so," and it is the first year in which we hear of these "organisms" being found in the "sediment" of the supply so furnished. Subsidence and filtration obviously constitute the remedy, and the question is simply one of outlay on works. Yet the existing evil is singularly small, when compared with the exaggerated statements founded upon it.

THE LATE MR. RICHARD LAMING.—Our readers will remember that, in the JOURNAL for May 13, we noticed the death of Mr. Laming, who came so prominently before the gas world in connection with the introduction of oxide purification. We have since received a letter from his widow, in which she says: "You will doubtless hear with regret (although not perhaps with surprise) that, in consequence of Mr. Laming having been bedridden for 14 years, he has left me and his family utterly dependent on our own exertions; I therefore think it not impossible that through your JOURNAL his friends in the gas world may be induced to acknowledge his life-long labours—so valuable to them, so little profitable to himself—by raising a pecuniary testimonial to his memory, to enable his widow suitably to provide for herself." We may add that any contributions sent to the office (payable to Mr. Walter King) will be forwarded to Mrs. Laming, and acknowledgment of them made in these columns.

SOUTHERN DISTRICT ASSOCIATION OF GAS ENGINEERS AND MANAGERS.—The quarterly meeting of this Association was held on Thursday, the 14th inst., at the Guildhall Tavern, London. There was a good attendance of members. Mr. John West (Maidstone) the President, was in the chair, and Mr. John Thorman, of West Ham, was elected a member. The meeting was occupied in considering the present position of gas managers under the Weights and Measures Act, 1878. Several of the members said they were selling coke by the old measure; some by the new; and others by weight—the experience of these last being satisfactory. They seemed inclined to think it was the best method, and they had not found any difficulty whatever in getting rid of their coke. Letters were read from several members, in answer to a circular which had been sent out, asking whether they intended selling by weight or measure in the future. The discussion was brought to a close by the President, who said he considered that it would be well if all could sell coke in the same manner, but at present there were many different opinions, so that each must do that which he thought would suit the circumstances of his Company best. The meeting terminated with a vote of thanks to the President.

SALE OF THE LLANTRISSANT AND PONTDOWN GAS-WORKS.—On Tuesday, the 19th inst., Messrs. Stephenson, Alexander and Co. sold by auction, at Cardiff, the Llantrissant and Pontdown Gas-Works. The description of the former works has appeared in the advertising columns of the JOURNAL. There is a gasholder capable of containing 8000 feet of gas, and the works are situated, with plant, on 1622 square yards of freehold land. The Pontdown works have a gasholder capable of containing 15,000 feet of gas and are situated on half an acre of freehold land. They were sold for £2050, the buyer being Mr. Evan John, of Llantrissant.

Correspondence.

[*We do not hold ourselves responsible for the opinions expressed by Correspondents.*]

THE NATIONAL WATER SUPPLY EXHIBITION AT THE ALEXANDRA PALACE.

A correspondent writes to us on the above subject as follows:—

Attracted by a public announcement that the Lord Mayor would inaugurate a National Water Supply Exhibition at the Alexandra Palace, I climbed the hill on which the Palace stands, and proceeded to inspect the exhibition, intending if possible to assist at the opening ceremony.

Finding it necessary to inquire where the exhibition was being held, my attention was directed to a few implements painted *blood red*. These, I was told, formed the outdoor portion of the display. Entering the building, I again asked, "Where is the National Water Supply Exhibition being held?" and was bluntly answered, "Here."

Among washing-machines, cases of stuffed birds, and stalls of miscellaneous articles, I discovered something partaking of the nature of what the exhibition pretended to be. This exhibit was a display of machines for filling soda-water bottles. I still presumed I had come to the wrong shop, and had I not perceived the Lord Mayor, attended only by a body-guard of two policemen, doubtfully inspecting other objects in the exhibition, I should have left with the impression that I had been imposed upon.

Turning away in disappointment, I consoled myself that perhaps the opening ceremony would be interesting, and, encouraged by the thought, I followed the Lord Mayor to the dining-room where the Committee of the National Water Supply Association had assembled. We were both too late! The luncheon had been eaten, the toasts drunk, and the speeches made; and thus the Lord Mayor of London inaugurated the National Water Supply Exhibition at the Alexandra Palace.

If Mr. Chadwick and the National Water Supply Association desire to deal practically with the grand question they have taken in hand, I venture to suggest that the public will more readily understand their motives if they leave well-borers, filter-makers, and mineral-water manufacturers to advertise their own wares, and themselves remember that "nothing succeeds like success."

METER-RENTS.

SIR,—As bearing on your comments on the question of "meter-rents," in last week's "Circular" to Gas Companies, I enclose you a letter which I sent to all the members of my Committee, in expectation of the subject being raised in our Council last week.

H. WOODALL.

Leeds, Aug. 20, 1879.

Dear Sir,—Several paragraphs having recently appeared in the local newspapers on the question of meter-rents, and other matters involved in the proposal to be submitted to the Town Council to-morrow, I beg to offer the following remarks thereon:—"Why should I pay 20 per cent. for my meter, and richer people only 10 per cent.?" asks Teazle. Why, indeed! The smallest consumer can have a meter, which costs 15s. 9d., and 3s. 6d. for fixing = 19s. 3d., for 3s. per annum, which is only 15½ per cent. on our expenditure, and for this we undertake to repair and renew free of charge; and, on an average, meters are renewed once in about 15 years. The "rich" consumer uses a meter which costs 40s., and 5s. for fixing = 45s., and pays 7s. per annum, or 15½ per cent.—exactly the same rate as the smallest user. So far, rich and poor are on the same terms; but only so far. The well-to-do consumer retains possession of his house, and so we get a constant rent; whereas thousands of the poorer classes change their abodes so frequently that rents are only paid on half the lives of the meters. The average cost of a main and service-pipe to a cottage house is 30s., which, added to the cost of meter and fixing, is 50s., and upon this sum the meter-rent gives just 6 per cent. For a larger consumption the cost of main and service would be with meter not more than 90s., and the 7s. meter-rent gives 8 per cent., or 2 per cent. more than from the smallest consumer. But that is not all. We have a leakage which averages 3000 feet per customer per annum, and nine-tenths of this loss is quite independent of the consumption on the main; that is to say, the loss on a service-pipe to a house in which the consumption is *nil*, is just as great as if our income from the pipe were £10 per annum. Now, there are not less than 10,000 customers in this town who do not consume 6000 feet of gas a year. Is it rational, then, that we are to be put to such a considerable expenditure of capital without interest, to meet a sale the profit on which is at least problematical? The Corporation ask no profit on their business, giving all they can in anticipation of the revenue. Therefore, whatever is taken from income on meter-rent *must* be put on to the price of gas. The question, then, is—Shall those from whom we derive a profit be saddled with a charge for the relief of those who already involve us in loss? Clearly, if we place no restrictions to the use of meters, we shall have to multiply our losses by placing them in all situations, and be mulcted in the annual costs of inspection, leakage, maintenance, &c. This evil would necessitate ultimately the institution of a "deposit system," and a contract from every customer to pay (whether he burns gas or not) a percentage on our expenditure—a system which is provided for in many Acts of Parliament, but which is unwieldy, and far less satisfactory than the present system of meter-rents.

"Can any body explain how it is that with less consumption of gas the bills never get less?" Again I quote indignant "Teazle." *Can* such things be?

In 1876–77 our income from 56,000 customers was £150,000. In 1879–80 our income from 60,000 customers is estimated at £110,000, showing a reduction of 17s. 3d., or 30 per cent. per customer.

The income per customer and per mile of main in Leeds is the lowest I have ever heard of, and is, I sincerely believe, the very lowest in the country.

(Signed) HENRY WOODALL.

Aug. 12, 1879.

PROPOSED NEW RESERVOIR FOR THE BRADFORD CORPORATION WATER-WORKS.—The Water-Works Committee of the Bradford Corporation propose to supplement their high-level service storeage supply by the construction of a new reservoir on Thornton Moor. This reservoir has been long projected, as more storeage is needed to utilize all the water that can possibly be obtained. The new reservoir, which has been designed by Mr. A. R. Binnie, C.E., the Water-Works Engineer, will have an area of about 40 acres, a total depth of water of 25 feet, retained by an embankment about 1376 yards in length. Connected with the reservoir will be a conduit, 4½ miles in length, to convey the water from the Oxenhope Valley.

Legal Intelligence.

SOUTH SHIELDS COUNTY COURT.—Thursday, Aug. 14.

(*Before Mr.* E. J. Meynell, *Judge.*)

SOUTH SHIELDS CORPORATION *v.* SOUTH SHIELDS GAS COMPANY.

This case, which was referred to in the Journal for July 15, p. 97, was tried to-day. It was an action by the Corporation of South Shields to recover £20 15s. 11d. from the South Shields Gas Company for repairing roads, according to the following particulars:—To repairing and reinstating the surface of Ocean Road and Fowler Street, South Shields, along the course of defendants new gas-main, in consequence of the delay and omission of the defendants to properly reinstate and make good the said road and street after the operations of the defendants in laying such gas-mains: namely, to use of steam-roller, including men's time, coke, oil, &c., 2½ days at 30s., £3 15s.; roadmen, &c., 10 days at 4s., £2; horses and drivers, 4¾ days at 9s., £2 2s. 9d.; 32 tons of whinstone road metal at 8s., £12 16s.; 26 cartloads of water at 1d., 2s. 2d.—total, £20 15s. 11d."

The Town Clerk (Mr. J. M. Moore) appeared for the Corporation, and Mr. J. Strachan for the Company.

The Town Clerk, in opening the case, called attention to the Gas-Works Clauses Act, 1847, and especially sections 10, 11, and 12. Under the 11th section, he said, the Company had power to break up any street or road for purposes connected with their business, and under the 12th section, if any delay took place in replacing the road in a proper condition, the persons having control of the road could do the work and recover the expenses.

Mr. Strachan raised an objection against the jurisdiction of the Court, on the ground that the Company should be sued before two justices of the peace.

It was, however, decided to hear the case, the Judge to consider the point, if necessary, afterwards.

Mr. *Matthew Hall*, Borough Surveyor, said that the entire length of road which had been broken up by the Company was about 1200 feet. Shortly before August 15, 1878, the road had been thoroughly well metalled, and made a proper macadamized road, and was in good condition. The steam-roller had been used upon it. He remembered the road being opened by the Company to lay in an enlarged main for supplying the district with gas. That was, perhaps, two months after the Corporation had made it. Before the road was opened it had maintained the condition into which it had been put by the Corporation. After laying the main the defendants made the road again in a fashion. The trench which they cut was about 3 feet wide. The defendants filled the trench up principally with stiff clay, and with some of the foundation-stones for the road. They put only part of the old road metal upon the top of the trench, and the remainder they took into an adjoining field, and so left the trench. When the defendants left the trench it was necessarily soft, and was certainly not in anything like the condition in which it was previously to its being opened. The condition of the trench was such that cart traffic would naturally avoid going on the top of it. The road was safe for ordinary cart traffic, but not for a very heavy weight. Water would go through it, and it was not so hard as the adjoining portion of the road. It could not have been made in the same condition as it was previously without the use of the steam-roller. He found the road in an unsatisfactory condition, and made three reports to the Town Improvement Committee on the subject. On the 15th of August he reported to the Committee that the macadamized roads were frequently damaged by the operations of the Gas and Water Companies in laying their mains, and that they could not, without the aid of the steam-roller, put the roads into the same condition as they were before. He therefore recommended that each Company should be called upon to hire the roller, and reinstate the roads. He also suggested that an arrangement should be come to for the Corporation to do the work, and charge each Company with the cost thereof, and that the Corporation should not be responsible for any damage done to the pipes by the use of the steam-roller. He afterwards again drew the attention of the Committee to the subject, and on the 2nd of September he served a notice upon the defendants, requiring them, within ten days, to "repair, restore, and make good the surface of Fowler Street and Ocean Road, where it had been disturbed by the laying down of the new mains." The notice also stated that, in case the road was not, within the ten days, made equal to what it was before being disturbed, the Corporation would do the required work, and charge the Company with the cost. On the 12th of September he again reported to the Committee on the subject, stating that the Company had certainly done something to give the road a better appearance, by taking off a quantity of loose metal, and leaving the finer material on the top of the trenches. This was, however, in his opinion, only an apparent, and not a real improvement; and it must be admitted that the surface could not be so hard as it was before they commenced operations. The defendants not having done the work, he did what he considered necessary—between the 18th and 26th of September inclusive. The steam-roller was used, and, in his judgment, its employment was absolutely necessary. In his opinion, the road, even after the steam-roller had been used, was not so good as it was before it was broken up by the defendants, because after that it subsided, and he had to put in extra metal, which had not been charged for. Even now the trench showed itself in some places in Ocean Road.

Cross-examined: He had complained over and over again of trenches being filled up principally with clay, but he could not say that on that occasion he directed the defendants what to do. He had so often suggested to them not to put in clay, that he thought he would not do so in this case. He did say that without the use of the steam-roller the road would have remained an eyesore.

Re-examined: Ocean Road was solid all over before it was broken up by the defendants.

James Seagrove, a foreman in the employment of the Corporation, gave corroborative evidence.

Mr. *Newcomb*, Surveyor and Architect of Newcastle, said he surveyed the roads in question the previous Tuesday. If a road had been rolled by a steam-roller previously to being broken up to lay a gas-main, it could not possibly be put into a proper condition again without the use of the steam-roller. The account rendered by the plaintiffs was, he considered, exceptionally moderate.

Mr. *Spencer*, Borough Surveyor of Tynemouth, said he had inspected the road in question, and was of opinion that it could not have been properly reinstated without the use of the steam-roller and metal, as charged in the account.

This was the case for the prosecution.

Mr. Strachan contended that the Corporation were attempting to rid themselves of the liability which had been attached to corporations using steam-rollers, and endeavouring to fix the liability on the Company. He referred to the case at Brighton, where a gas explosion took place by the pipes being broken by the steam-roller, and in which Justice Lush held that the Corporation were clearly responsible.

The Judge said the whole question was, whether the defendants did or did not reinstate the road, and make it good at the time. He should certainly not hold that the Company were bound to use the steam-roller, after the Brighton case.

Mr. *W. J. Warner*, Engineer of the Company, was then called, and said that he saw the operation that went on when the Company broke open the road to lay the mains. He examined the roads after the workmen of the Company had finished, and he considered they were in as good a condition as they could be made by the ordinary means used in making roads. All the old material that was necessary was put back, and nothing but rubbish thrown away. Only the surplus caused by replacing a 4-inch main by a 9-inch was removed. On the 2nd of September the men were employed on the road, and he gave special instructions to make the road good.

Cross-examined: The road was not put in so good a condition as the adjacent parts.

Mr. *Duncan Wemyss* said that after putting in the mains, the road was filled in under his superintendence. They refilled in the rubbish taken out of the trench. They took away some of the clay and replaced it with ashes. As the workmen filled in the rubbish they used the beater. The trench was repaired in a proper manner. The thing was done in the ordinary way it would be done by workmen experienced in road making. Every suggestion made by the Borough Surveyor was attended to. When the road was finished the Surveyor said he was satisfied with the way in which the work had been done, but it would require the roller to go over it.

The Judge reserved his decision, in order to enable him to look through the sections of the Act of Parliament.

LAMBETH POLICE COURT.—Friday, Aug. 22.

(*Before Mr.* Saunders.)

OPPONENTS OF A CONSTANT SUPPLY OF WATER TO LONDON.

Mr. *Henry Wilson*, owner of some houses at Kennington, was summoned, at the instance of the Lambeth Water-Works Company, for contravention of the regulations made under the Metropolis Water Act, 1871, by permitting waste of water, and not providing proper fittings for the water supply.

Mr. Louttit, the Secretary to the Company, prosecuted, and informed the Magistrate that, under the regulations of the Act, the Lambeth Company had spent a considerable sum to allow of the public having a constant supply of water. Some 5000 houses were now supplied, and the system was being rapidly extended. Notice had been served on defendant that he should have the necessary fittings ready, but not having done so, a great waste of water followed. The Company, although having the power, did not wish to cut off the water, as the tenants would suffer, and therefore, as defendant had not done the necessary work, it was requisite to bring him to the court. It was only the desire of the Company that the regulations should be carried out, and the public receive the benefit of constant supply.

Defendant made several objections with regard to the powers of the Company under the Act, which the Magistrate overruled. He also said he was willing to make arrangements with the Company with regard to the question, and an adjournment was ordered.

Mr. Louttit said there were 2000 houses in the district of defendant's premises, and only 150 had failed to comply at present with the regulations.

Mr. *William Jonathan Oakley* was also summoned by the Company for having defective fittings at several houses in Salamanca Street and Princes Street, of which he was owner, so that water supplied by the Company was wasted.

Mr. Louttit said the fittings of some twelve houses were in bad condition, and the waste of water was in consequence very great.

Defendant now said he had men at work carrying out what was required by the Company.

Mr. Saunders, with the consent of Mr. Louttit, agreed that there should be an adjournment, to allow defendant to complete the work.

Faversham Gas Company.—At the annual meeting of this Company, on Wednesday the 13th inst., a dividend of 10 per cent. was declared.

The Gas Supply of Berkhamstead.—At the Chesham County Court on the 12th ult., two cases were set down for hearing, which appear to have created much interest among the consumers of gas in the district supplied by the Berkhamstead Gas Company. In one of the cases judgment was given against the Company, and the second case was adjourned till Monday, the 11th inst., but prior to that the Company determined not to carry the proceedings further. The circumstances of the matter seem to be that, in consequence of an alleged deficiency of supply, as well as the inferior quality of the gas, a great deal of dissatisfaction was manifested during the past winter, and many of the consumers refused to pay their accounts in consequence. Some who held out have paid since, but others have continued to hold out, and the Company, to enforce payment, summoned Mr. E. Miller, one of the Lighting Inspectors of the Parish, and Mr. J. E. Lane, who was at one time Chairman of the Company, but has since ceased to be a Director. The original claim against Mr. Miller was for £9 0s. 6d., but the defendant paid £6 6s. into court, leaving £2 14s. 6d. still due to the Company, the Counsel for whom (Mr. Croome) said, in opening the case, that the claim, though small, involved a question of considerable importance. The defence likely to be made was that the defendant had received an article of inferior quality, but he should submit that this defence could not be set up, as the article had been consumed. Evidence was then given of the correctness of the charge, and of application having been made for payment. For defendant, it was contended that there was an implied contract between the Company and the consumers; they had arranged to supply a certain article at a certain price, and up to the Michaelmas quarter of 1878, there had been sufficient of a proper quality; but after the commencement of the quarter, the gas was very bad, and complaint was made about it. Hoping that it would improve, the second quarter was entered upon, and at the end of that quarter the defendant objected to pay the Company's demand. The Counsel for the defence (Mr. Clarke) said that the question to be dealt with was not as to the small balance, but a question of public importance, and he submitted that the amount paid into court was quite equal to the market value of the article supplied, which he considered was 3s. 9d. per 1000 feet. The witnesses on behalf of the defendant were then examined in support of his case. At the conclusion of the hearing, which occupied four hours, the Judge said he had come to the conclusion that the gas was bad, defective in supply and quality, and he thought the amount paid into court was ample. He should, therefore, give judgment for the defendant, with costs; but, as it was a question of public interest, he would grant a case, if the plaintiffs thought well, for the superior courts. The case against Mr. Lane was then called on, but adjourned, in order to enable the Company to consider their position after the previous decision. As before stated, they have determined to abandon all further proceedings in the matter, and have paid into court the expenses incurred in Mr. Miller's case—£6 10s.

Miscellaneous News.

METROPOLIS WATER SUPPLY.

The Registrar-General publishes the following table of the average daily quantity of water supplied to London during July, 1879. According to the returns furnished to him by the Metropolitan Water Companies, 135,618,047 gallons, or 616,175 cubic mètres of water (equal to about as many *tuns* by measure, *tons* by weight), were supplied daily; or 239 gallons (108·6 decalitres), rather more than a *ton* by weight, to each house, and 33·7 gallons (15·3 decalitres) to each person, against 38 gallons during July, 1878.

Companies.	Number of Houses, &c., supplied in July, 1878.	July, 1879.	Aver. Daily Supply of Water in Gallons* during July, 1878.	July, 1879.
Total supply	547,987	566,943	147,960,686	135,618,047
From Thames	258,497	270,176	75,266,172	70,175,631
„ Lea and other Sources	289,490	296,767	72,694,514	65,442,416
THAMES.				
Chelsea	29,014	29,700	9,505,400	9,139,200
West Middlesex	50,896	52,532	11,540,934	11,040,207
Southwark and Vauxhall	81,000	86,570	25,196,388	23,968,176
Grand Junction	38,462	39,648	13,838,650	12,256,148
Lambeth	59,125	61,726	15,184,800	13,771,900
LEA AND OTHER SOURCES.				
New River	126,987	128,492	31,779,000	27,951,000
East London	117,084	120,459	31,456,792	29,108,900
Kent	45,419	47,816	9,458,722	8,382,516

* Including that for manufactures and for various purposes other than for domestic consumption.

Note.—The return for July, 1879, as compared with that for the corresponding month of 1878, shows an increase of 18,956 houses, and a decrease of 12,342,639 gallons of water supplied daily.

The following is Dr. Frankland's report on his analyses of the Metropolitan Water Supply during July, 1879:—

"Taking the average amount of organic impurity contained in a given volume of the Kent Company's water during the nine years ending December, 1876, as unity, the proportional amount contained in an equal volume of water supplied by each of the Metropolitan Water Companies, and by the Tottenham Local Board of Health, was—Colne Valley, 1·3; Kent, 1·4; Tottenham, 1·8; New River, 4·5; Chelsea, 4·8; Lambeth, 5·6; East London, 6·2; Grand Junction, 6·5; Southwark, 6·6; and West Middlesex, 6·7. The Thames water delivered by the Chelsea, West Middlesex, Southwark, Grand Junction, and Lambeth Companies was much polluted by organic matters, and was not fit for dietetic use. The West Middlesex Company's water was also slightly turbid, and contained moving organisms. The Lea water distributed by the New River and East London Companies was but slightly better in quality, and the New River water was slightly turbid, owing to suspended crystals of carbonate of lime. The deep-well water delivered by the Kent and Colne Valley Companies and by the Tottenham Local Board of Health had not been affected by the heavy rains. It was, as usual, clear and bright, and of excellent quality for dietetic purposes. Seen through a stratum two feet deep, the waters presented the following appearances:—Kent, Colne Valley, and Tottenham, clear and colourless; Southwark, Grand Junction, Chelsea, Lambeth, and East London, clear and pale yellow; West Middlesex and New River, slightly turbid and pale yellow."

Results of Analyses expressed in Parts per 100,000.

Companies or Local Authorities.	Total Solid Matters.	Organic Carbon.	Organic Nitrogen.	Ammonia.	Nitrogen, as Nitrates and Nitrites.	Total combined Nitrogen.	Chlorine.	Total Hardness.
Inner Circle.								
Thames—								
Chelsea	27·60	·251	·031	·001	·154	·186	1·4	20·3
West Middlesex	28·18	·338	·057	0	·147	·204	1·3	20·9
Southwark	29·38	·336	·052	0	·159	·211	1·3	22·1
Grand Junction	28·00	·336	·049	0	·172	·221	1·2	20·6
Lambeth	31·42	·296	·035	0	·202	·237	1·3	24·2
Lea—								
New River	28·74	·226	·042	0	·213	·255	1·2	22·1
East London	29·90	·326	·039	0	·145	·184	1·4	21·5
Deep wells—Kent	46·80	·072	·013	0	·499	·512	2·6	29·4
Outer Circle.								
Colne Valley	13·84	·061	·018	0	·393	·411	1·5	5·4
Tottenham Local Board	40·28	·090	·019	·091	0	·094	2·9	26·5
Corporation of Birmingham*	24·18	·244	·031	·004	·275	·309	2·1	13·1
Corporation of Glasgow†	3·00	·141	·015	0	·007	·022	0·6	1·0

* Analyzed by Dr. Alfred Hill, Medical Officer of Health and Analyst to the Borough.
† Analyzed by Dr. E. J. Mills, F.R.S., of Anderson's College, Glasgow.

Note.—The numbers in the analytical table can be converted into grains per imperial gallon by multiplying them by seven, and then moving the decimal point one place to the left. The same operation transforms the hardness in the table into degrees of hardness on Clark's scale.

SOUTH ESSEX WATER COMPANY.—The half-yearly meeting of this Company was held at the London Offices, 1, Frederick Place, Old Jewry, on Tuesday last—Mr. W. C. Fooks in the chair. The Secretary (Mr. C. J. Fox) read the Directors report, which stated that the amount available for distribution was £909 14s. 11d., out of which it was proposed to pay a dividend at the rate of 2 per cent. This would amount to £856 19s., and leave a balance of £52 15s. 11d. to be carried forward. The Chairman, in moving the adoption of the report, said it would have been much more satisfactory to the Directors, as well as to the Proprietors, had they been able to recommend a larger dividend. He ventured to say at the last meeting that there was a probability of their arriving at a 2½ per cent. dividend, and he regretted that had not yet become practicable. This was to be accounted for by the diminished supply of water to some of the larger consumers, farmers and others, who having benefited by the heavy rainfalls, had been to a considerable degree independent of the Company. The cottage supply showed a very small amount of profit, but he was glad to say that, having been down into the district, there was a large number of better-class houses springing up, so that a supply of a more profitable character might be contemplated. The motion was seconded by Mr. Hammond, and agreed to; as was also the dividend of 1 per cent. for the past half year.

THE LOCAL GOVERNMENT BOARD AND THE METROPOLITAN WATER COMPANIES.

The Eighth Annual Report (1878-79) of the Local Government Board, which was issued on the 8th inst., contains, as usual, the yearly reports of Lieut.-Col. Frank Bolton, the Water Examiner, and Mr. Allen Stoneham, the Auditor, both of whom are appointed by the Board under the Metropolis Water Act, 1871.

Lieut.-Col. Bolton, after an introduction as in previous years, says: The following are the alterations and additions made to the works of the Companies during the year 1878, and the steps that have been taken by them towards providing constant supply:—

1.—*Kent Water-Works Company.*

1. *Constant Supply.*—During the year 1878 this Company has extended constant supply to upwards of 2000 houses, making the total number under constant supply 12,884.

2. *New Works.*—This Company is about to proceed with the construction of a new pumping-station and a covered reservoir in the parish of Farnborough for the supply of their new district, and have already laid 10 miles of 14-inch and 12-inch mains to connect these new works with the mains in their Metropolitan district.

2.—*New River Company.*

1. *Constant Supply.*—During the year 1878, 3198 additional houses were "laid on," 126 of which were furnished with constant supply; and 1541 houses, formerly supplied, were pulled down for street improvements. The total number of houses having supply at the close of the year was 127,673, and of these, 14,993 (being inhabited) had service on the constant system.

2. *New Works.*—Two of the five new filtering-beds already reported as proposed to be made at Hornsey have been completed and set to work, the three others were proceeded with, and are so far advanced that they will soon be ready to receive their filtering material.

Borings were continued at Ware and Turnford for fresh supply of water from the chalk, and for trial also of the possibility of obtaining water, within the Company's limits, from the lower greensand.

The sinking of a new well for further supply from the chalk was commenced at Enfield, and carried down to a depth of 52 feet.

Special extensions of mains (of a total length of about 18 miles) were made for the service of Upper and Lower Edmonton.

The ordinary extension of the year made further addition of about 17 miles to the length of the Company's pipes, and raised the total length to 696 miles. 257 additional hydrants were fixed.

3.—*East London Water-Works Company.*

1. *Constant Supply.*—This Company now gives constant supply to 91,190 houses out of 117,084 houses supplied by them, being more than three parts of their district, and it is intended to put the whole of the district on constant supply as soon as possible.

2. *New Works.*—During the past year this Company have erected a second engine at Haggar Lane; and the upper parts of their district, including Buckhurst Hill, Woodford, Loughton, &c., are now well supplied, and the complaints from these parts have ceased.

The Company are proceeding with the construction of an entirely new set of works at Lea Bridge, which comprise four filter-beds of one acre each in extent, and a pair of compound engines of 100-horse power nominal each. These works were commenced last July, and are making rapid progress, and by the end of the year 1879 will be completed. The Company will then be able to give a better supply to the higher parts of their district throughout.

In the event of any part of this Company's London works giving out, they have the Sunbury works to fall back upon as an auxiliary source of supply.

4.—*Southwark and Vauxhall Water-Works Company.*

1. *Constant Supply.*—No steps have yet been taken by this Company for giving a general constant supply in their district.

2. *New Works.—Filter-Beds.*—The thorough cleansing, reconstruction, and putting into good condition of all the filters at the several stations have been completed during the past year, and the filtration of the water supplied to the district should now be effectual.

3. *Reservoirs.*—The covered service reservoirs at Nunhead, constructed to contain 18 million gallons, have long since been completed, and the mains for distribution from them to the lower districts (comprising Kent Road, Bermondsey, Rotherhithe, Camberwell New Road, and Peckham) have been laid. The present state of these new works, however, is such that it appears they cannot be fully charged, and consequently they have only been taken partially into use.

The construction of further subsiding reservoirs by the Southwark and Vauxhall Company is necessary, and the acquisition of suitable ground near the intake has been made. Without such subsiding reservoirs the Company cannot deliver water efficiently filtered during the prevalence of floods.

Mains.—The 30-inch main under the Thames having been contracted to 21 inches, the Company have laid a new 30-inch main across the Thames at Richmond, leaving the 21-inch as a bye-pass. This work was completed, and the new main charged, on the 16th of December, 1878.

5.—*West Middlesex Water-Works Company.*

1. *Constant Supply.*—This Company is giving constant supply to a number of houses on the application of the owners, and is fully prepared to extend the system as required. 767 houses were put on constant supply during the year, making the total number of houses receiving constant service 2902.

2. *New Works.*—This Company has erected a new boiler-house and chimney, and fixed two additional boilers, at the Hammersmith pumping-station, also lowered the No. 1 36-inch conduit across the bed of the River Thames, to allow of the deepening of the river channel.

3. *Works in Progress.*—This Company is also increasing its storeage capacity of subsiding and unfiltered water reservoirs by taking in the whole of the spare land adjoining the present western reservoir at Barnes, and forming it into the reservoir, thus increasing the area of the western reservoir by 9 acres, making the area of this reservoir 17 acres, or a total area of all three reservoirs of 29½ acres. The reservoir capacity will thus be increased by 34¾ million gallons, making the total capacity of all the subsiding and storeage unfiltered water reservoirs 91¾ million gallons.

6.—*Grand Junction Water-Works Company.*

1. *Constant Supply.*—No steps have as yet been taken by this Company to give constant supply in their district.

2. *New Works.*—The Company have commenced the construction of a storeage reservoir at their Hampton works, to contain 45 million gallons of water uncontaminated by floods. They contemplate the formation of filters at these works, with pumping machinery for the purpose of supplying their low level district direct from Hampton, instead of from Kew Bridge as at present. Arrangements have been made for laying a line of 30-inch main from Twickenham to Notting Hill, in connection with this object.

At the Kew Bridge works an additional filter of three-quarters of an

acre has been provided, and the reconstruction of existing filters, with storeage reservoirs for pure water, has been commenced.

7.—*Lambeth Water-Works Company.*

1. *Constant Supply.*—This Company has been for some time past giving a constant supply to a portion of their outlying district at Esher and Molesey, and also in various courts and alleys in and about their town district; and has during the past year begun the systematic introduction of constant supply, which will be continued until the whole district is brought under it.

The locality thus supplied since the 1st of October is the area contained between the Kennington Park Road and Newington Butts; from Kennington Park to, and including the Elephant and Castle Tavern; the Walworth Road, and Camberwell Road southward as far as Brunswick Terrace; Brunswick Terrace in a straight line along Grosvenor Park, and Grosvenor Terrace to Farmer's Road; Farmer's Road as far as Kennington Park, and so along South Place to the Kennington Park Road. This area contains about 1800 houses, and up to December about 1000 of them had had the fittings altered in accordance with the Board of Trade rules and regulations, while the remainder were being rapidly altered.

This Company are now supplying about 4500 houses on the constant system. They are also introducing Deacon's system of water-waste meters in the above-named district, for detecting waste, which, if it proves successful, will probably be applied in other portions of the district to which the constant supply will be gradually extended.

The water-pipes and fittings in all new houses are fixed in conformity with the Board of Trade rules and regulations, so as to be ready to receive constant supply when the division of the district in which they are built is brought under it.

2. *New Works.*—The new filters and works at Thames Ditton were commenced in November, and will take about 18 months in construction. They consist of a service reservoir and four filters, with tanks, pipes, and other appliances. Also a pair of 90-horse engines and pumps for raising the water as it flows from the Molesey intake to the filter level.

When these works are finished and in operation, the total filtering surface of this Company will be about eight acres, which, by allowing slower filtration of the water, will, no doubt, tend to produce additional purity.

With the view of testing the depth of the chalk, and the probability of obtaining an auxiliary supply of water therefrom, a bore-hole was lately commenced at the Ditton works. It is considered that at this spot the chalk lies at a depth of 360 or 370 feet below the surface, and the Company's intention is (should the prospect of getting water be favourable) to sink a shaft and form drifts into the chalk basin.

This water, if obtained to the extent of 2 or 3 million gallons per day, would be mixed with the water from the Thames, and form an excellent auxiliary supply.

8.—*Chelsea Water-Works Company.*

1. *Constant Supply.*—This Company gives a constant supply to about 700 houses and factories, and all buildings on new estates and new lines of streets are being so supplied; though, judging by the absence of any applications for such supplies, there appears to be no desire on the part of public authorities or private individuals for constant service in this district.

2. *New Works.*—Amongst other works a system of auxiliary mains is now being carried out, which, when completed, will not only greatly increase the pressure to many of the high services, but will enable the Company gradually to extend the constant services as and where required. These auxiliary mains are of large diameter—principally 24-inch and 18-inch. The length of them is nearly five miles, and the cost will be about £18,000. 4560 yards (18-inch and 12-inch) were completed and worked last year, at a cost of £8000; and 4086 (24-inch and 18-inch) will be laid and be at work in 1879, at a cost of about £10,000.

3. The new subsiding reservoirs at West Molesey continue to act in a very satisfactory manner.

4. This Company is now equal in efficiency to any of the Companies drawing their supply from the Thames, and the improvement in the quality of water now supplied, especially during the period of floods, is of a very marked character.

During the year 1878, I have, in addition to my ordinary duties as Water Examiner, on several occasions been specially appointed to hold inquiries and report upon various matters connected with the water supply of the Metropolis, and also to inquire into and report upon numerous applications and complaints both from vestries and private individuals, which were generally adjusted satisfactorily.

The Board of Trade up to the end of 1872, and since that year the Local Government Board, have carried out to the fullest extent all the powers they possessed under the Metropolis Water Acts of 1852 and 1871, for the benefit of the consumers, and the Water Companies have always evinced a readiness to remove all grounds of complaint, and adopt the suggestions made by the Government.

Subsequent to the passing of the Act of 1871, the Water Companies have, of their own accord, and in consequence of the recommendation of the above authorities, incurred and undertaken a considerable expenditure, amounting altogether to £1,992,324 11s. 5d., for the improvement of the water supply both in quantity and quality, by extending the storeage capacity of their reservoirs, and increasing their areas of filtration, as well as by providing for the requirements of constant supply by the construction of high-service reservoirs for filtered water, the laying of mains, and the addition of powerful machinery to their works. These measures have materially improved the supply of water to the Metropolis.

The total certified expenditure of the Companies to the 31st of December, 1878, is shown in the following statement, and amounts to £11,967,323 4s. 6d. Of this, £168,741 18s. 4d. has been expended during the past year.

Statement of the Expenditure of the Eight Metropolitan Water Companies, on Works, Improvements, &c., to Dec. 31, 1878.

Name of Company.	Expenditure to Dec. 31, 1877.	Expended during the Year 1878.	Total certified Expenditure to Dec. 31, 1878.
	£ s. d.	£ s. d.	£ s. d.
1. Kent	563,215 12 5	25,792 11 1	589,008 3 6
2. New River	2,980,214 6 6	49,923 12 9	3,030,137 19 3
3. East London	1,942,137 0 9	25,448 9 6	1,967,585 10 3
4. Southwark & Vauxhall	1,753,632 9 4	12,883 9 5	1,766,515 18 9
5. West Middlesex	959,297 8 5	8,654 15 5	967,952 3 10
6. Grand Junction	1,178,569 10 3	919 0 9	1,179,488 11 0
7. Lambeth	1,309,093 19 11	23,978 10 1	1,333,072 10 0
Chelsea	1,112,420 18 7	21,141 9 4	1,133,562 7 11
Totals	11,798,581 6 2	168,741 18 4	1,196,7323 4 6

During the year just ended considerable advance has been made in extending the constant supply to the Metropolis, nearly one-fourth of the total number of houses supplied being now on constant service.

The following statement shows the number of houses to which constant supply was given on the 31st of December, 1877, and the 31st of December, 1878, and the increase and decrease during the year:—

Name of Company.	1877.	Increase.	1878.	Total No. of Houses.	Estimated Population.
Kent	10,781	—	10,781	45,988	275,000
New River	15,093	Less 100	14,993	127,673	913,000
East London	69,665	18,585	88,250	117,084	878,130
Southwark and Vauxhall	500	Less 50	450	82,183	504,180
West Middlesex	2,135	767	2,902	51,493	386,197
Grand Junction	None.	—	None.	38,989	350,910
Lambeth	3,500	1,000	4,500	60,107	420,749
Chelsea	100	566	666	28,555	210,000
Totals	101,774	20,768	122,542	552,072	3,938,166

The average daily supply during the year, for all purposes, gives a consumption of 33·11 gallons per head of estimated population, and 237·40 gallons per house supplied.

The number of miles of streets containing mains constantly charged, and on which hydrants could at once be fixed, in each district of the Metropolis, is as follows:—Kent, 80; New River, 201; East London, 85; Southwark and Vauxhall, 112½; West Middlesex, 70; Grand Junction, 41½; Lambeth, 70; and Chelsea, 56—making a total length of 716 miles—while the total number of hydrants erected therein is at present only 4676. There has been an increase of 23 miles of mains and 257 hydrants during the year.

The Chief Officer of the Metropolitan Fire Brigade reported to the Metropolitan Board of Works that the number of fires attended by the Brigade during 1878 was 1659, and that the quantity of water used for extinguishing the same was 19,226,916 gallons. Of this quantity about two-fifths of the whole were taken from the river, canals, and docks, and the remainder from the street-pipes.

During the year there were 8 cases of short supply of water, 30 of late attendance of turncocks, and 18 of no attendance, making 56 cases in which the water arrangements were considered unsatisfactory.

Notwithstanding the effectual filtration and delivery of good water by the Companies to their respective districts, the supply frequently deteriorates after having been delivered by the Companies into the cisterns of the consumers. The remedy for this is a constant supply, but until such constant supply is general, the attention of all householders should be given to the fittings and cleanliness of their cisterns, as well as to their house drains and the water-pipes connected therewith, upon which depend, in a great measure, the purity and abundance of the domestic water supply.

(Signed) Frank Bolton, Lieut.-Col.,
Water Examiner appointed under the Metropolis Water Act, 1871.

Mr. Stoneham's report is as follows:— *Dec.* 31, 1878

I have the honour to transmit for the information of the Local Government Board a statement of the accounts of the Metropolitan Water Companies for the year ended the above date.

During that period no question of material importance has arisen out of the audit of the accounts. It may, however, be advisable to bring the undermentioned circumstances to the notice of the Local Government Board.

In the course of my investigation of the accounts of the Grand Junction Company, I observed that the Company had adopted measures with regard to the issue of their debenture stock, which appeared to me to be open to question as to how far they were in conformity with the intentions of the Legislature as implied in the Companies Clauses Acts. The facts of the case were briefly these. Debenture stock being required to be raised to the extent of £15,000, the stock was allotted to a member of the Board of Directors, and by him placed on the market. To enable him to take up the stock, he appears to have negotiated a loan with his brokers, the result being that the amount realized as premium by the sale of the stock was paid into the Company's credit, less the interest of the loan which the Director in question had contracted. The arrangement was defended on the ground that, under the Companies Clauses Acts, it is not compulsory on a company to dispose of the debenture stock at a premium; and that, by the plan adopted, a premium had been ensured, although to a smaller amount than had been actually realized. On a full consideration of the facts of the case, I felt it would be improper for me to sanction any mode of raising stock which had the effect of charging the proceeds of such stock with the interest of loans contracted by a director in his individual capacity, and, as such, not distinctly contemplated by the Legislature in the various Acts of Parliament by which the Company is governed. On the one hand, I was not able to point to any enactment requiring the Company to dispose of their debenture stock at a premium; but, on the other hand, the Company were unable to refer me to any statutory powers authorizing them to contract loans for purposes such as those described. Accordingly, I declined to pass the accounts of the Company until the capital account had been credited with the full premium, less commission, shown by the brokers note to have been realized, and the sum deducted for interest had been actually repaid. Eventually the Company acquiesced in my views, and the money deducted for interest was duly paid in.

Whilst referring to the affairs of this Company, I may point out that during the past year they obtained an extension of their capital powers. Under the new Act they may raise an additional sum of £300,000 by the issue of share capital, and a further sum of £75,000 on mortgage. The share capital may be issued in the form of new ordinary shares or stock, or new preference shares or stock, at the Company's option, and out of the profits of any one year dividend is limited to 7 per cent. on the amount paid up in respect of ordinary capital, and 6 per cent. on the amount paid up in respect of preference capital. The Company's district is extended to include the remaining portions of the parishes of Isleworth and Ealing, and, in addition, the parishes of Hanwell and Heston.

This Act marks a new starting-point of the Legislature in respect to the Metropolitan Water Companies, since it is the first occasion on which the arrangement (known as the auction clauses) by which share capital is to be submitted to auction, under certain safeguards, in the open market, has been incorporated with their Acts.

My attention has been for some time past directed to the practice of laying pipes by the Southwark and Vauxhall Company outside their authorized parliamentary limit of supply, and charging the expenditure to the capital of the Company. In my report of the year 1876 I pointed out that loss had accrued from the extension of the supply of water outside the authorized districts to the town of Richmond. The present

practice has existed for some time past, and is explained to have been forced upon the Company by exigent circumstances and a due regard for what the Directors felt to be the public convenience. The expenditure incurred has from time to time been included in the capital expenditure of the Company, as recited in the preambles of their various Acts, and has been also included in the capital expenditure certified by me. The question has at different times formed the subject of conversation between the Chairman of the Company and myself, and I am now informed that it is the intention of the Directors at an early period to apply to Parliament for powers to extend the district of the Company to include the places alluded to. I have also received an assurance that arrangements will meanwhile be made that in any case where a supply of this description is applied for, the necessary outlay shall be provided for by a payment from the applicant.

(Signed) ALLEN STONEHAM,
Auditor appointed under the Metropolis Water Act, 1871.

Statement of Share and Loan Capital and of Expenditure for Works of the Metropolitan Water Companies on the Dates mentioned.

Description.	New River on Dec. 31, 1878.	East London on Dec. 25, 1878.	Southwark and Vauxhall on Sept. 30, 1878.	Lambeth on Sept. 30, 1878.	Grand Junction on Sept. 30, 1878.	Chelsea on Sept. 30, 1878.	West Middlesex on Sept. 30, 1878.	Kent on Dec. 31, 1878.	Total.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Share capital—									
Ordinary	2,019,958 0 0	1,624,710 0 0	863,300 0 0	1,108,075 0 0	930,055 0 0	615,600 0 0	990,763 15 0	616,506 0 0	8,828,967 15 0
Preference 4 per cent.	—	850 0 0	—	—	—	—	—	—	850 0 0
„ 4½ „	—	—	—	—	—	235,000 0 0	—	—	235,000 0 0
„ 5 „	—	—	494,700 0 0	—	—	*150,000 0 0	—	—	644,700 0 0
Loan capital—									
Bonds 4 per cent.	6,800 0 0	—	2,000 0 0	700 0 0	—	3,000 0 0	—	20,000 0 0	32,500 0 0
„ 4½ „	—	—	4,000 0 0	25,135 0 0	138,800 0 0	—	—	22,000 0 0	189,935 0 0
„ 4½ „	—	—	11,500 0 0	115,930 0 0	42,000 0 0	—	—	—	169,430 0 0
„ 4¾ „	—	—	—	—	—	—	—	—	
Debentures 4 per cent.	959,643 0 0	—	59,500 0 0	75,525 0 0	39,000 0 0	—	—	—	1,133,668 0 0
„ 4½ „	—	—	94,316 0 0	—	—	—	—	—	94,316 0 0
„ 4¾ „	—	330,000 0 0	260,665 0 0	—	—	150,100 0 0	—	—	740,765 0 0
Total capital	2,986,401 0 0	1,955,560 0 0	1,789,981 0 0	1,325,365 0 0	1,209,855 0 0	1,153,700 0 0	990,763 15 0	658,506 0 0	12,070,131 15 0
Total expenditure for works	3,030,137 19 3	1,967,585 10 3	1,766,515 18 9	1,333,072 10 0	1,179,488 11 0	1,133,562 7 11	967,952 3 10	†664,293 2 3	12,042,608 3 3

* £75,000 convertible to ordinary stock in 1882.

† Including £75,284 18s. 9d. discount on shares issued before the passing of the Act of 1871.

Statement of Receipts and Expenditure of the Metropolitan Water Companies during the Year ending Dec. 31, 1878.

Particulars of Service.	New River.	East London.	Southwark and Vauxhall.	Lambeth.	Grand Junction.	Chelsea.	West Middlesex.	Kent.	Total.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Balances, inclusive of cash reserves, brought forward	245,099 16 3	84,584 13 0	13,133 15 4	41,944 17 1	26,821 5 6	50,780 10 9	102,035 4 4	53,514 6 0	617,914 8 3
Water-rates receivable	395,888 6 8	205,739 19 1	167,082 7 10	143,681 18 3	133,765 8 5	94,669 7 7	157,815 11 4	84,284 6 11	1,382,867 6 1
Rents and extra receipts	10,498 17 0	2,387 5 9	208 1 7	87 15 0	141 0 6	624 3 5	618 12 0	153 0 6	14,718 15 9
Interest	1,012 13 2	1,503 19 9	16 6 9	197 11 4	139 6 8	1,293 15 8	2,100 17 10	1,124 4 3	7,388 15 5
Total receipts for revenue	652,499 13 1	294,215 17 7	180,440 11 6	185,912 1 8	160,867 1 1	147,307 17 5	262,570 5 6	139,075 17 8	2,022,889 5 6
Expenditure for—									
Maintenance of works and for pumping	52,959 6 3	30,127 2 8	46,682 7 5	30,478 19 11	23,373 7 9	14,479 18 3	19,511 15 11	11,806 18 9	229,419 16 11
Salaries (Engineer's department)	8,920 5 7	9,277 16 2	7,186 6 7	5,355 5 7	4,146 3 1	3,661 13 10	5,899 7 8	2,382 6 0	46,829 4 6
Rents for houses and lands and water rights	16,390 13 6	6,373 10 4	1,338 12 8	1,569 10 0	2,624 1 6	1,550 0 0	3,125 13 5	351 10 0	33,323 11 5
Rates and taxes	25,311 15 4	20,389 15 2	9,174 12 4	6,535 16 9	6,043 5 1	5,857 3 6	8,408 3 10	4,146 19 5	85,867 11 5
Allowances to Directors	8,897 1 10	2,139 7 6	1,016 13 4	1,830 0 0	813 6 8	1,213 17 9	2,430 7 6	2,000 0 0	20,340 14 7
Allowances, Company's Auditors	84 0 0	42 15 9	42 14 0	64 0 11	105 0 0	80 4 6	263 16 0	90 0 0	572 11 2
Salaries (Secretary's department)	6,662 0 7	2,371 6 0	2,188 16 1	1,937 11 8	2,745 10 8	2,053 9 9	2,724 15 9	1,119 6 0	21,802 16 6
Gratuities and donations	134 9 6	—	—	—	—	—	—	—	134 9 6
Superannuation	2,886 13 6	919 11 0	400 0 0	952 3 4	405 4 8	656 13 8	572 13 3	198 12 0	6,971 11 5
Annuity and friendly fund for workmen	855 1 8	—	—	—	—	—	—	—	855 1 8
Commission to Collectors	11,048 15 11	6,126 3 9	3,779 2 9	3,284 8 8	3,532 5 5	1,990 2 10	4,187 11 6	2,297 17 2	36,246 8 0
Stationery and general establishment charges	3,530 17 0	2,150 4 1	1,109 11 1	620 9 5	1,476 16 0	666 0 0	1,257 1 6	703 15 3	11,514 14 4
Fire premiums	200 2 9	—	—	—	—	—	—	—	200 2 9
Law and parliamentary	5,051 5 5	1,792 2 9	928 13 10	457 9 10	1,018 11 8	1,352 15 8	1,421 18 4	576 0 0	12,598 17 6
Official Auditor and Water Examiner	307 2 1	204 7 11	187 1 9	137 11 2	128 5 8	119 5 8	102 18 6	65 1 6	1,251 14 3
Interests payable on loan capital, &c.	38,040 10 3	15,331 3 11	20,355 9 8	9,058 9 7	9,965 4 3	5,322 17 3	—	1,735 0 0	99,808 14 11
Dividends paid on preference capital	—	10 0 0	24,735 0 0	—	—	18,075 0 0	—	—	42,820 0 0
Dividends paid on share capital	201,895 1 4	115,854 0 10	22,017 10 0	69,288 16 7	56,252 19 7	36,936 0 0	93,787 11 6	57,256 10 2	653,283 10 0
Losses on collection of water-rates written off	18,858 12 2	3,696 19 7	6,951 15 5	9,163 9 6	6,084 2 11	3,194 13 9	4,640 8 5	3,000 13 6	55,590 15 3
Balances, inclusive of reserves carried forward	250,485 18 5	77,409 10 2	32,346 4 7	45,182 18 9	42,152 16 2	50,098 1 0	114,436 2 5	51,345 7 11	663,456 19 5
	652,499 13 1	294,215 17 7	180,440 11 6	185,912 1 8	160,867 1 1	147,307 17 5	262,570 5 6	139,075 17 8	2,022,889 5 6
Rate of dividends paid on ordinary capital	£9 19s. 10d. per cent. per annum.	£7 per cent. and tax, including bonus.	£2½ per cent. except for three months on new ordinary shares at 4½ per cent.	£6¼ per cent. per annum.	£6 per cent. on £839,955; £4½ per cent. on £131,922 10s. per annum.	£6 per cent. per annum	£9 16s. 8d. per cent. per annum.	9½ per cent. (including bonus).	—

LIVERPOOL UNITED GASLIGHT COMPANY.

The Half-Yearly Meeting of this Company was held last Tuesday—Mr. D. O. BATESON in the chair—when the following report of the Directors was submitted:—

From the printed statement of the Company's accounts now presented, it will be seen by the Proprietors that the total revenue for the year ending the 30th of June last has been £415,281 14s., and the expenditure £338,748 8s. 1d., leaving a surplus of £76,533 5s. 11d., from which £33,971 6s. was taken for payment of the dividend declared last February. Out of the balance (£42,561 19s. 11d.) the Directors now recommend that a dividend be declared for the half year ending the 30th of June last at the rate of 5 per cent. on the ordinary consolidated stock of the Company, and at the rate of £3 10*s.* per cent. on the consolidated B (7 per cent.) stock, and on the amount paid up in respect of the £7 10s. shares.

The Directors have pleasure in announcing that the present condition of the Company's affairs will justify a further reduction in the price of gas, the charge for which it is accordingly proposed to reduce to 3s. 4d. per 1000 cubic feet, as from the 1st of July last.

At the last half-yearly meeting, the Directors alluded to a Bill then being promoted in Parliament by the Corporation of Liverpool, of a character which threatened the interests of this Company. By that Bill, as originally introduced, the Corporation applied for power to supply light by electricity "or other means," for public and private purposes, generally, throughout the borough, and thus to compete on unequal terms with this Company, whose undertaking the Corporation by the same Bill sought authority to acquire. The Bill was strenuously opposed on behalf of the Company, and was ultimately allowed to pass only in such a modified form that no apprehension need now be entertained of the value of the Company's undertaking being affected by the measure. The clauses relating to the proposed purchase of the Company's works were struck out at an early stage of the Bill, and the authorization granted to the Corporation is limited to lighting by electricity (by way of experiment) streets and certain places of public resort only, during a period of five years, the Corporation being expressly restricted from supplying the light for purposes of profit.

The members of the Board who retire by rotation are John Grant Morris, Esq., William John Marrow, Esq., James Fletcher, Esq., and Hamilton B. Gilmour, Esq., all of whom are eligible for re-appointment. The retiring Auditor is J. R. Darsie, Esq., who is also re-eligible.

The CHAIRMAN, in moving the adoption of the report, said that during the last six months the Company had been in the same position as that country which had no history. He had really nothing to tell the meeting. Referring to the Act obtained by the Corporation of Liverpool, he said that, in committee of the House of Commons, the Company succeeded in eliminating the most objectionable features from the Bill, as presented, which, as now passed, was strictly an experimental one. The Corporation had power to provide light for their own buildings, and also for the streets in case of need, all of which the Directors contended they had power to do without any Bill at all. They were further empowered to light places of public resort, such as theatres, railway-stations, &c.; but they were bound not to make any profit out of their transactions. The Corporation had obtained their Bill, and it only remained to be seen what use they would make of it, and how they intended to spend the £50,000 which they had power to raise. The Company, of course, had nothing to do with the matter, except as very large ratepayers in the borough; but he commended it to the attention of some of the economists of the Council, as a matter that ought to be pretty narrowly watched. He thought the accounts which were presented showed that the Company were in a sound, healthy condition, rather different from a good many other companies in which many of those present were interested. He was glad to be able to announce that they had paid off the balance of the claim by the Dock Board for the burning of the landing-stage—£18,581 14s. 9d. They left off last year with a handsome balance; and, on looking over the estimated accounts for the next year, the Directors thought they saw their way clear to reduce the price of gas 2d. per 1000 feet, as from the 30th of June last. Some of the Directors were anxious to make the reduction 3d., but the figures would not admit of it. They hoped, however, when they met the Proprietors again, that they might go farther in that direction. During the past spring they had a very exceptional time. There were a great many dark and cold days, and the consumption of gas increased enormously. In order to avoid being aground, as they very nearly were during the spring, and to provide for the natural increase of the town, the Directors had been obliged to extend their works at Linacre; and as they had no capital unexpended he did not see how they could go over the next winter without calling up something—possibly 30s. each, or thereabouts—on the C shares.

Mr. E. LAWRENCE seconded the motion, which was unanimously agreed to.

In reply to a Shareholder,

The CHAIRMAN said the claim of the Dock Board was absolutely closed.

On the motion of the CHAIRMAN, seconded by Mr. LAWRENCE, it was resolved to declare the dividends recommended in the report.

The retiring Directors and Auditor were then re-elected, and on the motion of the Rev. T. GARDNER, a vote of thanks was tendered to the Chairman and the Directors for their satisfactory management of the affairs of the Company.

WAKEFIELD GAS COMPANY.

The Half-Yearly Meeting of this Company was held on Monday, the 11th inst.—Mr. W. STATTER in the chair—when the following report was taken as read:—

The amount divisible amongst the Proprietors will be £5307 7s. 2d., out of which the Directors recommend the payment of dividend for the half year at the rate of £11, £8 5s., and £7 14s. per cent. per annum respectively.

The Directors have pleasure in stating that they have reduced the price of gas, from and after the 1st of July, from 3s. to 2s. 9d. per 1000 cubic feet.

The works generally are in good order.

The retiring Directors are Dr. Wood, W. Stewart, and G. Haigh, who are eligible, and are recommended for re-election.

[The capital of this Company consists of £43,300 of 10 per cent. shares, £36,700 of 7½ per cent. shares, and £75,000 of 7 per cent. shares—all subject to the sliding-scale. There is no loan capital. The expenditure on capital account to Dec. 31, 1878, was £92,791 8s. 11d.; additional to June, 1879, £316 8s. 11d.—total, £93,107 17s. 10d. As there is a credit of £5803 5s. for premiums on shares sold, the balance in hand on capital account is £2695 7s. 2d.]

DR.—*Revenue Account, for the Half Year ended June* 30, 1879.

To Manufacture of gas—			
Coals, including dues, carriage, unloading, and all expenses depositing same on works	£2,787 17 4		
Purifying materials, oil, water, and sundries at works	243 6 7		
Salaries of Engineers, including Chief Engineer Superintendents, and Officers at works	100 0 0		
Wages and gratuities at works	922 15 5		
Repair and maintenance of works and plant (including renewal of retorts), machines, apparatus, tools, materials, and labour	925 8 7		
		£4,979	7 11
Distribution of gas—			
Salaries of Surveyor, Chief Inspector, Inspectors, Assistant Inspectors, and Clerks in Light Office	£164 0 1		
Repair, maintenance, and renewal of mains and of service-pipes, including materials, laying and paving, and labour	126 14 0		
Repairing, renewing, and refixing meters	57 9 6		
		348	3 7
Public lamps—			
Repairing		59	5 11
Rents, rates, and taxes—			
Rates and taxes		669	4 5
Management—			
Directors allowances	£200 0 0		
Salaries of Secretary, Accountant, and Clerks, Office Keepers, and Messengers	82 17 0		
Collectors salaries	117 10 0		
Stationery and printing	30 10 11		
General establishment charges and incidentals	23 10 1		
Auditors fees	25 0 0		
		479	8 0
Law and parliamentary charges—			
Law charges		1	2 0
Bad debts		59	0 0
Superannuation allowance		100	0 0
Total expenditure		£6,695	11 10
Balance carried to profit and loss account		5,863	8 1
		£12,558	19 11

CR.—*Revenue Account.*

By Sale of gas—			
Common gas	£8,262 2 0		
Public lighting and under contracts	795 10 7		
		£9,057	12 7
Rental of meters		354	11 4
Residual products—			
Coke, less labour and cartage	£992 17 3		
Tar, less labour and cartage	1,059 2 1		
Ammoniacal liquor	946 19 0		
		2,998	18 4
Rents		48	4 0
Transfer fees		1	5 0
Fitting and service laying-account		75	11 2
Interest on delayed calls		23	7 6
		£12,558	19 11

The CHAIRMAN, in moving the adoption of the report and accounts, said that the works of the Company were in very good order. The new purifiers were completed, but a shed was required to be built over them, and the work had been let by contract for £400, which amount would be included in the current half year's accounts. The quantity of gas made last half year out of the coal used was much the same as before, about 9000 feet per ton, and the average illuminating power was equal to 17 candles. The quantity of gas manufactured was 71,419,000 feet, as against 64,740,000 in the previous corresponding half year, showing an increase of 6,679,000 feet. The leakage during the half year was 13¼ per cent., as against 16 per cent. a year ago. The income was £860 more and the expenditure £511 more. The amount paid for wear and tear during the half year was £925 8s. 7d. This was rather heavy, but it arose chiefly from the Directors having removed one of the benches of the retorts which had been in use about 20 years. The Directors recommended the payment of an increased dividend. They believed they were in a position to do so, and they had also decided to give the public the benefit of their prosperity, for they had reduced the price of gas from 3s. to 2s. 9d. per 1000 feet from the 1st of July. That reduction in price would take about £750 from the Company's income each half year. The sum which the Company would appropriate to themselves as increased dividend would be a little less than £550, and, as they were giving the public £750 in the shape of diminished prices, they were awarding the public the best portion of the increased profit. The amount divisible amongst the Shareholders was £5307 7s. 2d., and after they had paid the proposed dividends they would have a balance of £1026 19s. 8d. to add to the reserve-fund, which would then amount to £5268 4s. 4d.—a sum which the Directors considered was very satisfactory. The insurance-fund now amounted to £1802, and they were authorized by Act of Parliament to put aside 1 per cent. of their profits until that fund reached the one-twentieth part of the Company's capital.

Alderman MOORHOUSE criticized the conduct of the Directors in lately reducing the wages of the stokers from 30s. to 27s. per week. He considered that, as there had been an almost general rise in the remuneration paid to those employed by the Company, and especially as the Shareholders were receiving an extra 1 per cent. dividend, the stokers wages should not have been lowered, and he asked the Directors to reinstate the men at their former pay.

The CHAIRMAN said the men were now receiving 6s. a week more than in 1871; and, considering that a stoker was little more than an ordinary labourer, he thought 27s. per week was very good pay. The Directors generally were of that opinion, and in acting as they had done they were only following the example set them by other gas companies in the neighbourhood.

Alderman MOORHOUSE said that if they compared the wages which the stokers at present received with their wages some years ago, they ought to apply the same principle in looking at the salary of every other official in the employ of the Company, and if they did so they would find the same amount of margin. It was true the men had not to serve an apprenticeship to learn the work, but the Company were in a position to pay the men better wages, and if they did so it would be a greater inducement to the men to serve them better, rather than lose a good situation.

Mr. J. ROBERTS questioned Alderman Moorhouse's last remark, and said that if the stokers had more money to spend, the probability was that they would not attend so well to their duties. He seconded the Chairman's motion, and it was carried.

The CHAIRMAN then moved the payment of a dividend for the last half year at the rate of 11 per cent. on the original shares, £8 5s. per cent. on the new B 5th shares, and £7 14s. on the new shares.

Alderman MOORHOUSE seconded the motion, and it was unanimously agreed to.

The retiring Directors and Auditor having been re-elected,

Mr. ELLERTON proposed that £25 should be granted out of the funds of the Company for a dinner for the Shareholders on the day of the next half-yearly meeting.

Mr. ROBERTS seconded the motion, and it was carried by 11 votes to 5.

A vote of thanks was then passed to the Chairman and Directors for their efficient services.

The CHAIRMAN, in returning thanks, expressed a hope that the Directors had performed their duties during the past half year to the satisfaction of the Shareholders, and promised that in the future they would endeavour to carry out their duties in an equally satisfactory manner.

The meeting was then brought to a close.

CORK GAS CONSUMERS COMPANY.

The Twenty-first Half-Yearly Meeting of this Company was held on Tuesday, the 12th inst.—T. MAHONY, Esq., J.P., in the chair.

The SECRETARY (Mr. Denny Lane) read the following report of the Directors:—

You will find annexed the accounts of the Company for the half year ending at Midsummer. We are glad to call your attention to an increase of nearly £600 in the amount of gas-rental, as compared with the first half of the previous year—an increase which is, to some extent, to be attributed to the more extended use of gas for heating and cooking. The sum realized for residuals will bear comparison with that item in the accounts of any other company, and gives substantial evidence of care and economy in manufacture. The scrubbing power at the works, however, is not sufficient for our winter manufacture, and we have therefore ordered a new scrubber, which we are satisfied will improve the production of sulphate of ammonia, and so increase the value of the residuals.

Since our last meeting, the death of Mr. David Barry has deprived the Board of a colleague whose loss they deeply regret, and the Proprietors of a Director who for several years had devoted great attention to their business, and had rendered valuable service to the Company. The vacancy so caused we have filled up by the co-option of Mr. George Lynch, a gentleman whom you had previously elected as one of your Auditors.

We have also from the same cause lost the services of Mr. Alexander M'Ostrich, who was from the foundation of the Company, 22 years ago, one of your most active Directors, and one who always worked most harmoniously with the other members of the Board in guarding your interests. At an early period of our history, when the finances of the Company were very much restricted, Mr. M'Ostrich cheerfully joined his colleagues of that day in raising, on their personal security, advances which were absolutely essential for carrying on the business of the Company. Without such aid your undertaking would certainly have pined, and possibly have perished amidst the difficulties that surrounded its early growth. The vacancy thus created has been filled up by the selection of Mr. Richard Barry, son of your late Director.

Two Directors—William Harrington, Esq., J.P., and George Lynch, Esq.—go out of office by rotation, are eligible, and offer themselves for re-election.

One Auditor, John Dwyer, Esq., goes out of office by rotation, and is re-eligible. It will also devolve on you to elect another proprietor as Auditor in room of G. Lynch, Esq., who has joined the Board of Directors.

We have written off £538 from the suspense account, *re* former Accountant, being the balance of expenses incurred in the prosecution.

As you will perceive, we have allocated £200 to depreciation, and £300 to the insurance fund. After these deductions are made, the balance of profit and loss stands at £5831 6s. 8d. The usual dividend at the rate of 8 per cent., which we recommend, will absorb £5416, and leave about £415 to be carried to reserve. This fund will then amount to £10,620.

Resident Engineer's Report to the Directors.

Gentlemen,—I beg to report that the works are in good order. The annual repairs are well forward. One of the chimneys of No. 2 retort-house having got into bad condition, was taken down some time since, and has been rebuilt. The reconstruction of the retorts in No. 3 house will be finished within a few weeks.

Gas-Works, Cork, Aug. 2, 1879. (Signed) THOMAS TRAVERS.

DR. *Capital Account, June* 30, 1879. CR.

Share capital of the Company	£150,000	0	0	Amount paid on shares	£135,409	0	0
Debentures	12,000	0	0	Ditto debentures	12,000	0	0
				Uncalled capital and shares not registered	14,397	0	0
				Due by Shareholders on registered shares	194	0	0
	£162,000	0	0		£162,000	0	0

Revenue Account, for the Half Year ending June 30, 1879.

Coals	£6,719	0	5	Rental—			
Labour	2,902	12	2	March quarter	£10,008	6	3
Wear and tear	1,575	8	8	June ditto	5,015	10	3
Purifying materials	63	5	7	Public lighting—			
Water and gas at works	130	4	11	March quarter	1,139	13	0
Public lighting	295	2	1	June ditto	687	16	11
Salaries	992	16	8	Residuals	5,259	18	5
Rents	153	12	10	Transfer fees	4	9	0
Rates	1,056	11	3				
Advertising and stationery	51	14	0				
Office expenses	159	15	10				
House and office repairs	5	6	10				
Auditors	10	0	0				
Directors	175	0	0				
Profit and loss	7,825	2	7				
	£22,115	13	10		£22,115	13	10

The CHAIRMAN, in moving the adoption of the report and accounts, said it was his painful duty to reiterate the statements made in the report with regard to the loss they had sustained by the death of two of their Directors—Mr. David Barry and Mr. Alexander M'Ostrich. Mr. Barry was with them for several years, while Mr. M'Ostrich had for over 22 years laboured earnestly in their service. Turning to the business of the meeting, he had only to say that the affairs of the Company had been conducted to the Directors, and he hoped to the Shareholders satisfaction. They could afford to give a handsome dividend of 8 per cent., and they saw no reason, if coals and freights continued as they were, for any hesitation in promising the same dividend for many years to come. But coals and freights would not always continue as low as they were now. The present was an ex-

ceptional time in this respect, and possibly these items might become higher hereafter. However, they must only be grateful for what they had, and they considered the dividend a very acceptable one, carrying forward, as they did, a balance of £400, which they had added to the reserve-fund, and which made that fund now £10,600. They had again, as at the close of last half year, written off a sum of £538, which was the balance of the cost of the prosecution of their former Accountant. This left in the suspense account figures amounting to £438 4s. He supposed, properly speaking, he should state that they had securities for this amount. On the last occasion when he addressed them he referred to the subject of their rating expenses. Unhappily, it had not turned out as pleasing to them as they anticipated on that occasion, for the rates they were paying were struck on the old amount for which their premises were rated. The new valuation, which was something more reasonable than the former one, did not come into operation until after the present rate was struck, so that for the current half year they were paying for rates £230 more than they anticipated. There was no chance of getting any of it back, he believed—in fact, they had not tried to do so; but they hoped for the future that the sum they would be rated at would be reduced to something like £4000, instead of £4900, and that would be a gain to the Company of about £400 each half year. As they were all aware, the electric light was recently introduced into the city with very fine effect. Of course, it was not for them to throw any darkness upon it, for, he supposed, the gentlemen who introduced it gave as good light as they could; but it was their business to see if they could not also give good light. He supposed every gentleman present had an opportunity of seeing the electric light at the College and at the *conversazione* at the Opera House. Well, there was no one who could deny that they had also exhibited a good light, and that they could give any amount of it, if the expense was no object. The gas-lights that were exhibited at the College by the Company were pronounced to be exceedingly brilliant by all who saw them—far better than they had ever seen before—and there was one equal to 200 candles, alongside which the electric light certainly looked a little blue. The result had, at all events, been very gratifying to the Directors, and until the electric light advocates could show that they had means of storing the light for five minutes in advance—for, at present, the light stopped when the engine stopped—gas shareholders need not be afraid. When returning from the College on one of the evenings during the late visit, he had a rather large party with him, and they came by the road leading past the gate. One of his friends took the other route, and subsequently at home they were talking of the lights exhibited—a subject uppermost with him. "I can assure you," said his friend, "that the electric light at the College gate on the road was far in excess of anything on the College grounds." The fact was that it was the 200-candle light exhibited by the Gas Company. When their Secretary was last in London, he went, as on several occasions before, to investigate the electric light. He visited two different railway stations where the light had been in use, and found that they had given it up altogether. When it came to be a question of cost, he thought they could give as much light as one wished for, but the fact was that the people complained rather about the money than the light. Reverting again to the College, of course it was necessary that they should put their best leg foremost on that occasion. When they heard that the electric light was to be brought into requisition, they volunteered to give a full supply of gas, without cost, for all the arrangements taking place at the College. They knew in doing that they would have the sanction of the Shareholders to go to any expense they considered necessary. It showed that they were not afraid, and it showed that they could give as good a light as the people required, and also that they were ready to contribute to the reception of the eminent men who went there. Every one, from the President of the College downwards, spoke of the arrangements as being perfect, and they should all admit that the result was most gratifying to any Corkman. They also exhibited some cooking apparatus, which, as had been stated in the report, was very useful for increasing gas consumption. At the exhibition in the Corn Exchange there was a gas-engine which worked very effectively. They were for their own business about to put up one at the gas-works, in order to let the public see its utility.

Mr. J. O'Sullivan seconded the motion, which was passed unanimously.

Mr. Morrogh asked how the leakage for the past half year corresponded with that for the previous six months.

The Chairman said as regarded leakage they were passing through very exceptional times. They were now, and had been for the past two years, re-laying all the services from the mains to private dwellings. In the operation of re-laying, they found that an immense number of the old pipes were defective, and the very fact of disturbing them was a source of great waste of gas. They were also exchanging all the meters of the Company at present. They were going over the whole city, and the exchanges proceeded at the rate of about 40 each week. The old meters were replaced by fresh ones, not necessarily new, but which had gone through the process of testing. All these things caused a temporary waste of gas, and, therefore, the leakage was not so satisfactory as they could wish. They had men going about constantly to ascertain if the consumers had any complaints to make. They had in that way had a number of complaints besides those that came in. There were a great many people who stated their complaints to their neighbours instead of to the Company, and it was a great pity that they would not come to the gas offices, as the officials were most anxious to attend to them. They did everything in their power to facilitate the consumption of gas.

Mr. N. Mahony moved—"That a dividend at the rate of 8 per cent. per annum be declared for the half year on the paid-up capital of the Company," which was carried.

The retiring Directors were then re-elected.

The Consulting Engineer (Mr. George Anderson) said before they proceeded to any other business, he wished to say a word with respect to the leakage. He thought that the Chairman's very cautious speech was not calculated to convey what he would call a just impression upon the subject, because his observations would go to show that they were not reducing the leakage. The fact was that they were reducing it. They had made tests from time to time of the amount of gas going out of the works, and the result of those tests was that there was only three-fourths of the amount of gas going out now that went out about a year ago. It had not been reduced to what they expected, but still they were going on fairly well, considering the difficulties they had to contend with. Cork was like a Dutch city, built on canals, which had been arched over, and when the gas found its way into those subways it was very difficult to detect its leakage, except some person happened to smell it; whereas if the foundation of the city was hard, the gas would come to the surface, and in that way leakage would be easily discovered. They were, however, prepared to meet the difficulty as best they could.

The retiring Auditor (Mr. J. Dwyer) was re-elected, and Mr. Edward M'Carthy elected in place of Mr. Lynch, now a Director.

A vote of thanks to the Chairman terminated the proceedings.

Reduction in the Price of Gas at Selby.—The Directors of the Selby Gas Company have reduced the price of gas, as from the 1st of July last, to 4s. 2d. per 1000 cubic feet.

BURY ST. EDMUND'S GAS COMPANY.

The Sixtieth Half-Yearly Meeting of this Company was held on Friday, the 8th inst.—Mr. G. Thompson in the chair.

The Secretary (Mr. W. Salmon) having read the notice convening the meeting, the following report was presented:—

The New Act.—Your Directors have the pleasure to report that since the last meeting of Shareholders the new Act has received the Royal Assent and is now in force. The Directors believe that the benefit of it to the Shareholders will be very substantial, and will add materially to the value of their shares for the reasons given below. The Company have the power to raise £20,000 of additional capital by the creation and issue of new shares bearing a dividend of 7 per cent., such shares to be offered for sale by public auction in lots of not more than £100 each, and at such reserve price, not being less than the nominal amount thereof, as the Company shall determine. The whole amount of each share, together with the premium given by the purchaser, must be paid to the Company within three months after such sale. Any sum of money which shall arise from the premiums paid on such shares, after payment of the expenses attending the issue and sale of the shares, is to be "expended in extending or improving the works of the Company." There is also given a power to the Company to create an insurance-fund to the extent of 1 per cent. per annum upon the paid-up capital of the Company, which fund is intended "to meet any extraordinary claim, demand, or charge which may at any time arise against or fall upon the Company from accident, strikes, or other circumstances, which in the opinion of a Justice due care and management could not have prevented." This insurance-fund may amount to 1-20th part of the paid-up capital of the Company. The reserve-fund may, in addition to the above-mentioned funds, be increased to £5000. It will thus be seen how greatly the stability of the Company may be increased by availing ourselves of these several protective funds, and how steadily the dividends may be maintained and the safety and good condition of the Company's works be secured. Your Directors have, by another clause in the Act, secured the power of increasing the present maximum dividends in a way that they believe will largely increase the value of the present shares. The clause referred to gives the right to increase the present maximum dividend to the extent of 5s. per cent. for every penny by which from time to time they can reduce the price of gas below 4s. 6d. per 1000 cubic feet. The standard price for this operation is, by the Act, fixed at 4s. 6d. per 1000, and that price has been compelled to be charged for gas sold since the passing of the Act. Your Directors consider the present condition of the Company to be so strong that from the 1st of July instant they will be justified in reducing the price of gas to the consumers to 4s. 2d. per 1000, which will enable them to pay 1 per cent. additional dividend on all the shares of the Company in February next, and, should the prosperity of the Company continue, there is no reason to doubt that further reductions in the price of gas may ultimately be made. The Shareholders will thus see how greatly the value of their shares will be increased. The New Act will therefore in every way prove of great value to the Company. It has been obtained without opposition, and the anxiety of your Directors attending its progress has been amply repaid to them by the successful result of their labours.

New Works.—The past half year has been a busy one to the Directors and their Manager in the additions and improvements made to the works of the Company. Amongst them may be mentioned a new station-meter, a new governor, a new scrubber, a new set of purifiers, and two new boilers which have been, or are in course of erection. Besides these, the engine-house and other buildings have been much improved, and placed in excellent repair. To meet the expense of the above works the last call of £1 per share upon the old capital has been made and paid, with a single small exception, and will, it is hoped, be sufficient for the purpose. The only other capital which it is at present intended to call up will be £1000 of the capital authorized by the new Act, and that will be partly required for payment of the expenses of the Act, and the remainder of it will be a small fund with which to meet future expenditure on capital account.

Electric Light.—Much has been said and written about this. That it may some day be brought into some use is not improbable, but at present there is nothing about it to induce an opinion that for general house purposes, in a town like this, it can be brought into competition with gas. For large public places, streets, and squares, it will no doubt come into earlier use, but such use in this town would not, as regards the streets and squares, damage this Company, as they have to light them at cost price. The Shareholders, therefore, upon this head need not, your Directors believe, feel any alarm as to the value and stability of their property.

Gas Stoves, Engines, &c.—The present consumption of gas for warming and cooking in this town is unusually small. Should the economy and value of it become more generally known and appreciated, the increase of gas required for those purposes will far more than make up any deficiency which it is believed will ever arise from the use of the electric light here.

Progress of the Company.—The extension of the business of the Company will be best shown by taking the sale of gas at the following periods:—In the year ending Dec. 31, 1868, the gas sold was 19,412,000 feet; in the year ending Dec. 31, 1873, 23,240,000 feet; and in the year ending Dec. 31, 1878, 30,894,000 feet. It is thus seen how steadily has been the progress of your Company—a progress which your Directors believe will continue. Their great anxiety and object will continue to be to supply to the consumers gas of the best and purest description, and at a price with which they will have no just cause of complaint. One further observation may fairly be made upon the position of the Company under their new Act, and that is that from henceforth the interest and benefit of the consumer are alike the interest and benefit of the Shareholder, because to increase the dividend of the latter the price charged to the consumer must be reduced; thus the mutual benefit of all is assured. The Directors have thought that in starting under their new Act with such widely different and extended powers and benefits they should lay this full statement before the Shareholders, that each of them may thus be fully informed of the increased and increasing value of their property, and be the better guided in dealing with it.

The Directors will recommend the payment of a dividend for the past half year of 10s. per share on the old capital, and 6s. 9d. per share on the new capital, both free of income-tax.

[The accounts show that the capital receipts to June 30 amounted to £32,470; the disbursements to December last being £30,682 15s. Additions last half year to the extent of £1055 13s. 7d. were made; leaving a balance in hand, on capital account, of £731 11s. 5d. On revenue account, the receipts for gas and meters were £5358 18s. 5d.; for residuals, £1434 8s. 8d.; and for fittings and labour, £204 0s. 1d. After meeting an expenditure of £3387 19s. 6d., and the dividends proposed in the report, there was a balance, to be carried to next account, of £4243 5s. 11d.]

The Chairman moved the adoption of the report. He said that with respect to the revenue account he had compared it with those of past half years, and found they were much the same. The Company were preparing to raise new capital, and thus not only add materially to the value of the works, but benefit the Shareholders by increased dividends, and consumers by a reduced price for gas. From July 1 the Directors had been enabled to reduce the price of gas to 4s. 2d. per 1000 feet; not that they were desired to do so either by any one, but they considered it best to do so, and he thought he might fairly say that on that day twelvemonth they would be in a position to make another reduction. He had gone carefully into the accounts, and did not think he was wrong in saying that since they had reduced the price they had received rather more money than when the gas was at 5s. 7d. per 1000 feet. He thought that might fairly be considered satisfactory. All these matters could not, however, be carried out unless it was by the exercise of great attention on the part of their Manager (Mr. John M'Crae) and their Secretary (Mr. Salmon).

Mr. Portway seconded the adoption of the report, and in doing so congratulated the Shareholders upon the excellent condition in which the works were, and the bright prospect which, he trusted, lay before them in the future.

The Secretary said that, with regard to the new Act, he had drawn up a somewhat elaborate report in order that the Shareholders might clearly understand the benefits it was hoped would be realized by the Act, and be better able to appreciate the value of the property they held. The Act had added £10,000 to the value of the property of the Company at that moment, and if they went on for the next ten years as they had gone on during the last ten, he was prepared to say that the Company would be the safest and most prosperous in the country. There were two or three things in the Act which made them more than usually safe. In these days, when they heard of new lights coming up, it was very desirable to see the future of such a Company assured, and the prospects there were of success. If they were visited by another coal famine, or experienced any serious strain on their resources, what reserve had they to fall back upon? The Act

gave them two new sources of reserve strength. One was the insurance-fund, which they could create to the extent of 1 per cent. per annum upon the paid-up capital of the Company, and which might become a very important matter for them. Then they had the power of selling new shares by auction, and any premiums received would accumulate as a separate fund, which would only be drawn upon in cases where, if they had not this new fund, the revenue would have to be used. It would only be used, in short, to meet the expense of works to which the ordinary revenue was fairly applicable. With regard, again, to the balance in hand on the revenue account, £4243 5s. 11d., he looked upon that as one of the most valuable items he had ever seen in any public accounts, because that alone would be sufficient to equalize the dividends for the next ten years. Without calling upon the insurance-fund, the reserve-fund, or the premium-fund, there was sufficient in that balance alone to give them £400 for ten years, and thus enable them to carry out reductions in the price of gas, and this was the reward for the assiduity and economy with which the Company had been managed during past years. No one could say that the Act was a covetous one, because they could not benefit the Shareholders without first benefiting the consumers by reducing the price of gas. The Directors had reduced it during the present year, and although he did not like to prognosticate too long beforehand, he must say he did not think the Chairman had gone too far in the remark he had made with reference to this point; their prospects were such that they had a right to imagine they had not given the Shareholders or consumers the last benefit they would have. If the present state of things continued, he should not be surprised if they brought the price of gas down to something substantial under 4s. per 1000 feet, and, if this really happened, their gas would be as cheap as any in the country, considering their position, and the cost of getting coal. At that time the old Shareholders would not object to receive 12 per cent. instead of 10, nor would the new Shareholders object to receive 9 per cent. instead of 7 per cent. At the present time the old £10 shares were cheaper at £25 than they were three years ago at £20. Then they must remember that they had obtained the Act with very little difficulty. It might have cost them a great deal of anxiety and expense—it might have been opposed both by the Authorities and by other persons in the town and elsewhere; and that it was not so opposed was, he believed, owing to the universal opinion being so strongly in favour of a scheme which it was seen would be so much to the benefit of Shareholders and consumers. The Chairman had not praised the Manager at all too highly, for during the past few months he had commenced and nearly completed all the new works. Looking at the past ten years of their existence, he did not think he had ever heard of any company, which had been established 30 years, having made such progress during the short term of ten years. In that time the number of feet of gas sold had increased from 19,412,000 to 30,894,000. They need hardly trouble themselves about the next ten years, for if they only carned as much as they were earning now, they would be enabled to pay the same dividend; but considering the additional means they had at their disposal, there was no knowing what their future prosperity might be. The Company started 30 years ago, when he commenced his connection with it, and during that time the number of Shareholders had increased from 33 to 178, while the capital had increased from £12,000 to £33,000. If they asked him the value of the Company, he must tell them that he believed the real value of the property at the present moment was very nearly double its nominal value. He thought it was worth quite £66,000, and under these circumstances he did not think the Shareholders could complain that the Directors had not done their duty.

The report was then unanimously adopted.

A resolution authorizing the raising of new capital, to be sold by auction in terms of the new Act, was agreed to on the motion of Mr. Hoy, seconded by Mr. Smithyes.

Mr. Hooper said he had no doubt but that if they had known six months ago what they knew now, the Town Council would have been very sorry to let the chance of buying the gas-works slip through their fingers. They were too late now, and at that time they were a little frightened by the chance of the electric light being used. After all, considering the immense amount of labour it entailed, the Council might be better without the gas undertaking, and they must all feel that the works were in the best hands. With regard to the electric light, he did not think that they need be terrified, or be under any apprehensions that it would take the place of gas for the purposes of indoor illumination. It seemed entirely beyond control, and he did not think it could be used in small rooms. The use of gas for cooking purposes was in its infancy in Bury, and if it increased it would lead to a much greater consumption of gas, and, therefore, to increased benefit to the Shareholders and the public.

Mr. Salmon said he did not think the Council were wrong in refusing to purchase the works. It was a question whether they could have been better managed than they were by the Company. Had the Town Council assumed the property, the management would have been left to an unpaid committee, and they could hardly expect private gentlemen to devote their time to such a matter without being paid for it. Then the addition to the work of the Town Clerk would have been crushing, and unless the works had been well and carefully managed, things must have gone wrong. The Directors felt that the public had shown great forbearance in not opposing their Bill in Parliament, and they were justified in assuming that this forbearance was the result of the confidence with which they were regarded.

Votes of thanks having been accorded to the Chairman, the Secretary, the Manager, and the Auditors (Messrs. Hooper and Hoy), and acknowledged by all, the meeting terminated.

SEVENOAKS GAS COMPANY.

The Half-Yearly Meeting of this Company was held on Friday, the 15th inst.—Mr. E. E. Cronk in the chair—when the following report was submitted and adopted:—

The Directors, in presenting the Shareholders with the accounts of the Company for the past half year, beg to congratulate them on the continued and increasing prosperity of the undertaking.

The working of the last half year gives a profit of £1192 1s. 3d., against £929 12s. 3d. for the corresponding period of 1878, showing an increase of £262 9s.

This result is mainly attributable to the greater consumption of gas, which is 1,424,200 feet in quantity, and £289 2s. 8d. in value, in excess of last year, notwithstanding the reduction in price during the Midsummer quarter. Coke has realized a much higher price, and the manufacture of sulphate of ammonia has more than fulfilled the sanguine expectations entertained of it on the erection of the apparatus. Ammoniacal liquor, instead of being a drug, as frequently happened formerly, is now converted into a considerable source of revenue.

The balance of profit and loss account shows an amount of £1173 17s. 8d. for disposal, which the Directors recommend to be appropriated as follows, viz.:—The payment of a dividend for the half year at the rate of 10 per cent. per annum on the original shares, and 7 per cent. per annum on the new B shares (less income-tax); and also that £200 be added to the reserve-fund, leaving a balance of £154 18s. 2d. to be carried to next account.

The town having, within the last few years, greatly extended itself, new buildings rising in every direction, and with it a consequent increased demand for gas, considerable difficulty was experienced last winter in meeting the requirements of the public, and it became absolutely necessary that the works and mains should be enlarged. Your Directors consulted their Engineer (Mr. Alfred Penny) upon the subject, and with his advice they are now engaged in executing important and extensive alterations and additions in connection with the works and mains. At the works a double-lift gasholder 80 feet in diameter, and capable of storing 200,000 cubic feet of gas, is in course of construction, and it is hoped will be in operation early in November next. Your Directors have also succeeded in securing 1¾ acres of land immediately adjoining the works, thus amply providing space for further extensions and future requirements for manufacturing and storing purposes.

To carry out the foregoing it will be necessary to raise fresh capital, and they propose, with the sanction of the Shareholders, to issue the whole of the remaining additional shares to the present Proprietors at par, *pro ratâ*, as heretofore.

An extraordinary meeting was subsequently held for the purpose of raising, by the creation and issue of new ordinary shares, a sum not exceeding £20,000 in the whole, as authorized by the Act of 1876.

A resolution was carried to the effect that they be issued *pro ratâ* among the present Shareholders; with the addition that if the shares were not taken up, the Directors were to dispose of them according to their discretion.

A vote of thanks to the Chairman and Directors brought the proceedings to a close.

CROYDON COMMERCIAL GAS COMPANY.

The Half-Yearly Meeting of this Company was held on Wednesday, the 13th inst., when the report presented was as follows:—

The Directors, in presenting to the Shareholders the accompanying statement of accounts, have the pleasure to report that there has been a large increase in the sale of gas during the half year.

After placing £131 12s. 9d. to the reserve-fund, the balance available for dividend is £10,824 19s. 6d., enabling the Directors to recommend the declaration of the full statutory dividends, and, under the Parliamentary sliding scale, of an additional dividend of 15s. per cent. upon the respective classes of shares—all free of income-tax—for the half year.

Agreeably with the powers given by the Proprietors to the Directors at the extraordinary meeting held on the 19th of February last, 2000 new shares have been sold by auction, realizing a premium (after payment of expenses) of £5658 12s. 8d., which sum has been carried to the capital account.

The reports of the Gas Examiner of the Croydon Local Board of Health show that during the half year the illuminating power of the gas has been considerably above the parliamentary standard, and, as to purity, entirely free from sulphuretted hydrogen and ammonia.

The Company's new offices in Katherine Street, which have been for some time past in course of erection, will shortly be completed.

The continued increase of business having rendered it necessary to provide additional storeage room for gas, arrangements have been made for the erection of another gasholder, under the superintendence of Mr. Horatio Brothers, C.E., the Company's Engineer.

A reduction of 2d. per 1000 cubic feet in the charge for gas was made on the 1st of April last, and the Directors have decided to further reduce it 1d. per 1000 feet on and from the 1st day of October next.

The capital of the Company amounts to £149,100, in shares of £5 each; and £4000, being £2 per share on 2000 new shares sold by auction, as stated in the report, the premiums on which (£5658 12s. 8d.) also stand to the credit of capital account. The expenditure to the end of last year was £149,072 6s. 2d.; and there was added in the half year to June £3970 0s. 4d. The Company have a reserve-fund of £15,841, besides an insurance-fund of more than £3000. During the half year 10,805 tons of coal and cannel were used. The following is the

Revenue Account for the Half Year ended June 30, 1879.

Expenditure.

To Manufacture of gas—			
Coals, including all expenses	£10,065 6 1		
Purifying materials, oil, water, and sundries at works	206 15 3		
Salaries of Manager and Clerks	246 10 3		
Wages and gratuities	1,555 18 2		
Repairs and maintenance of works, plant, &c. (including renewal of retorts), materials, labour, and removal and re-construction of tar-tank	2,520 17 9		
	£14,595 7 6		
Less old material sold	54 4 0		
		£14,541	3 6
Distribution of gas—			
Salaries of Inspectors and Clerks	£258 14 4		
Repair, maintenance, and renewal of mains, service-pipes, &c., including materials, laying and paving, and labour	379 3 5		
Repairing and renewing meters	173 9 3		
		811	7 0
Public lamps—			
Lighting and repairing		431	18 0
Rents, rates, and taxes—			
Rents	£43 5 0		
Rates and taxes	1,420 0 5		
		1,463	5 5
Management—			
Directors allowances	£575 0 0		
Salaries of Secretary and Clerks	283 6 8		
Collectors commission	391 13 6		
Stationery and printing	74 15 5		
General establishment charges and incidentals	180 0 3		
Auditors	21 0 0		
		1,525	15 10
Bad debts	£203 6 2		
Discounts and allowances	45 7 1		
		248	13 3
Superannuation		75	0 0
Law charges		9	4 2
Total expenditure		£19,106	7 2
Balance carried to profit and loss account		8,396	12 2
		£27,502	19 4

Receipts.

By Sale of gas—			
Private rental—			
68,129,700 cubic feet, at 4s. per 1000	£13,624 0 8		
32,129,300 cubic feet, at 3s. 10d. per 1000	6,154 15 0		
Public lighting and under contract	2,786 11 9		
		£22,565	7 5
Rental of meters		553	4 2
Rental of gas-stoves		0	7 3
Residual products—			
Coke, less labour and cartage	£3,128 6 9		
Breeze	121 12 8		
Tar	526 4 4		
Ammoniacal liquor	542 8 9		
		4,318	12 6
Rents		52	15 0
Transfer fees		5	5 0
Sundries		7	8 0
		£27,502	19 4

The Recent Gas Explosion at Croydon.—In the Journal for July 8, page 51, we gave a short account of an explosion of gas which occurred the previous week, in consequence of one of the Croydon Gas Company's mains being broken by a steam-roller, belonging to the Local Board, passing over it. We now learn that the Board have paid £227 2s. 11d. for the damage thus caused—viz., £145 to the owner of the two houses, £75 to the occupiers, and £7 2s. 11d. to the Gas Company.

TOWN AND COUNTY OF POOLE GAS AND COKE COMPANY, LIMITED.

The Seventh Half-Yearly Meeting of this Company was held on Monday, the 11th inst.—Mr. W. Pearce in the chair.

The Secretary (Mr. J. Budden) read the notice convening the meeting, and the following report was presented:—

The Shareholders will notice that on the present occasion the profit for the half year is not quite sufficient to pay the full dividend, but this is very easily to be accounted for, as the consumption for this half year is on all occasions much below that of the other or December half year.

The consumption in the December half was 6,855,000 cubic feet, and in the present half it is only 6,397,000—upwards of half a million cubic feet less; but nevertheless the consumption for this half is 637,500 cubic feet in excess of the corresponding half year in 1878, the actual figures being 6,397,000 for 1879, as against 5,759,500 for 1878, which the Directors consider very satisfactory.

The Directors in their last report informed the Proprietors that when the new apparatus, then in course of construction, was completed and at work, they hoped to derive some greatly improved results, and they are now able to state that they have not been disappointed in this expectation.

The average quantity of gas obtained from a ton of coal for the last half year has been 9875 feet, as against 9750 in the former half, and at the present time it is a clear 10,000 feet. At the same time an arrangement has been made for the sale of the ammoniacal liquor, which will probably realize from £80 to £90 per annum.

The coke produced from a ton of coal has been equal to the average; but, owing to there having been a rather large stock on hand all last summer, when it came to be sold off in the winter there was a great depreciation, both in quantity and value, and this in itself is more than enough to account for the profit for the half year falling below the maximum dividend.

With these facts before them, the Directors do not think it necessary to reduce the dividend, but rather to supply the small sum required (less than £30) from the reserve-fund, and pay the full dividend as heretofore, feeling confident that in the next half year there will be a balance of profit, after paying the full dividend, more than sufficient to repay this small sum to the reserve-fund, and that every subsequent half year will, through the increased consumption, provide for itself.

Since the last meeting the Directors have raised a further sum of £500 in debenture bonds, and before the next meeting they will have to raise another sum of the like amount, when they will have exhausted the powers with which the Shareholders have entrusted them, and before raising any further capital they will have to obtain the consent of the Shareholders.

During the last half year the Directors were asked to tender for lighting the public lamps, and they sent in a tender accordingly; but the Corporation set aside the tender of the Directors, and made a proposal of their own instead. This the Directors found to be so unreasonable as to be quite impossible for them to accept, and hence nothing has come of it. As it was subsequently said in one of the town newspapers that "Liberal Paraffin" was better than "Tory Gas," the object of the offer made to the Directors can readily be understood. As it is evident that the safety and convenience of the inhabitants of the town is an element altogether disregarded in this transaction, the Directors can only express their regret at the result of this attempt at negotiation, and abandon all expectation of getting back the public lighting until a better state of things prevails.

[The capital of the Company consists of £9600 in £10 shares, entitled to 10 per cent. dividend; £10,520, limited to 4 per cent.; and £6500 debenture bonds, raised at 5 per cent. They are also authorized to raise £19,880 to be limited as to dividend to 7 per cent. The total expenditure on capital account to June 30, was £26,142 4s. 7d.; £285 11s. 2d. having been expended last half year.]

Revenue Account for the Half Year Ending June 30, 1879.

Expenditure.

To Manufacture—			
Coals, including all charges into the Company's stores, 811½ tons, average price about 15s. 2½d.	£623 2 4		
Carbonizing	141 12 6		
Purifying, storing, and selling products in the yard, &c.	40 6 10		
Repairs and maintenance of plant	61 12 3		
Rent, rates, and taxes	73 18 10		
		£940 12 9	
Distribution—			
Repairing and re-laying services, fixing meters, &c., &c.		43 7 0	
Management—			
Directors	*Nil.*		
Auditor, Manager, Collector, and Clerk	£172 0 0		
Stationery, printing, reports, books, stamps, &c.	12 13 6		
		184 13 6	
Miscellaneous—			
Discounts to large consumers	£66 7 10		
Bad debts and allowances—gas	11 11 1		
Do. proceeds	3 14 5		
		81 13 4	
Total expenditure			£1,250 6 7

Receipts.

By Gas supplied during the half year—			
Consumers meters, 6,397,900 cubic feet, at 5s.	£1,599 9 6		
Meter-rents	60 3 6		
		£1,659 13 0	
Products—			
Coke, estimated at about 40 per cent. in weight on coals carbonized, 232 tons, at about 15s. per ton	£210 10 5		
Tar, estimated at 10 gallons per ton; 8110 gallons, at about 2½d. per gallon	89 4 11		
Ammoniacal liquor, at 20 gallons per ton; 16,220 gallons, at 60s. per 1000 gallons	48 0 0		
Old materials for sale	33 8 4		
		381 3 8	
Discount, deductions from tradesmen's accounts, &c.		0 12 5	
		£2,041 9 1	
Deduct *Dr.* side		1,250 6 7	
Balance transferred to net revenue		£791 2 6	

The Chairman, in moving—"That the report of the Directors and the accounts up to the 30th of June be adopted, approved, and entered on the minutes"—said he should like to give a further explanation with regard to the lighting of the public lamps, as it might appear that the Directors were to blame in the matter. Of course, as long as full dividends were paid, it did not concern the Shareholders, but it was of the greatest importance to the public and the gas consumers, because they could manufacture, say, 30 million cubic feet of gas at a much lower price than half the quantity, but it would not be fair or just to light the public lamps at a loss, and increase the price to the consumers, or go without a dividend. He then read the correspondence on the subject between the Town Council and the Company, from which it appeared that, on being applied to, the Directors offered to supply gas to the lamps, as far as the mains extend, by average meter indication, at the rate of 4s. per 1000 feet, the quantity consumed to be calculated by the indications of meters to every 15 lamps, while lighting, cleaning, and extinguishing were to be charged net cost extra, and the usual conditions imposed as to regulators. If by contract, they offered to keep the lamps alight from half an hour after sunset to half an hour before sunrise, and undertake the lighting, cleaning, and extinguishing, at the following prices:—If 4 feet per hour were consumed, the charge per lamp would be £2 10s. for eight months, or £3 5s. for twelve months; whereas if 5 feet per hour were consumed, the prices would be £3 2s. 6d. and £4 2s. 6d. respectively. The Company also fitted up, in the High Street, two lamps burning 4 and 5 feet of gas per hour each, in order to enable the Council to consider what burner they would adopt. The Lighting Committee then, subject to the approval of the Council, offered to enter into a contract with the Company for three years on these terms: To pay £3 5s. per lamp for the first year, and £2 16s. per lamp per year for the remaining period of the contract, which payment was inclusive of lighting, cleaning, and extinguishing; the Company, at their own expense, to furnish each lamp with a Sugg's regulator, stand-pipe, and connections with the mains, which were to become the property of the Council at the expiration of the contract; the lamps to be lighted throughout each year from 30 minutes after sunset to 30 minutes before sunrise, except the usual five nights at the full of the moon; and the Company to light the lamps beyond their mains with mineral oil at the same price per lamp, and under the same terms. This offer of the Council was, he (the Chairman) said, such a wide departure from the very liberal tender made by the Company, that, in the interest of the Shareholders, the Directors were compelled to decline it, the result being that the Council had determined for the next twelve months to continue to light the borough with paraffin oil. They had tested the illuminating power of one of the paraffin oil lamps used for lighting the streets, and found it to be only 8½ standard candles; while the Company's gas, burned at the rate of 4 feet per hour with a Sugg's regulator and burner, gave the light of 13½ standard candles, and at 5 feet per hour the light of 15½ candles.

Mr. W. Penney seconded the motion. He said the report was highly satisfactory as far as it went, but it did not say how much gas was made, and the amount of leakage was entirely omitted from the report. As regarded the Town Council, he thought the Company had acted in the best manner they could. They made an offer, and the Council would not accept it; but, on the other hand, they had a right to go to the cheapest market, and if they chose to light the town with paraffin during the whole of the night—although the light was not so brilliant as that of gas—it was within their right so to determine.

The Secretary, in reference to the quantity of gas manufactured per ton of coal carbonized, and as regarded the leakage, gave the following figures:—Gas made from Dec. 31 to June 30, 7,790,000 feet; sold, 6,397,900 feet; used on the works, 100,000 feet; leakage and condensation, 1,292,100 feet—total, 7,790,000 feet. It was hoped, he said, to reduce this leakage by taking up old mains in West Shore and West Street, and re-laying them. He believed the average amount of leakage throughout the country was 10 per cent.

The Chairman, in reply to a question, said the Directors thought that, in order to encourage consumption of gas it would be advisable to allow a discount, on the same principle as that they would charge the public lamps 4s. per 1000 feet, large private consumers 4s. 6d., and small private consumers 5s. If they had obtained the contract for lighting the public lamps, they had hoped to charge 4s. to consumers alike. They could not manufacture small quantities of gas at the same price as large ones, for the larger the consumption the less the proportionate waste.

The dividends recommended in the report were then declared.

Mr. Penney said, although he had made some remarks on the report, he thought, taken altogether, it was the most satisfactory one ever presented to the Company. The Directors did not receive any reward beyond the satisfaction of knowing that they were carrying on the works with energy and skill, and therefore the Shareholders should give them—and particularly the Chairman, who was most indefatigable—a hearty vote of thanks.

Mr. Frampton seconded the proposition, which was carried *nem. dis.*

Mr. Penney then proposed a vote of thanks to the Secretary for the skilful and scientific manner in which he carried out his duties.

The Chairman and the Secretary respectively returned thanks, and the meeting shortly afterwards terminated.

COLNE VALLEY WATER COMPANY.

The Eleventh Half-Yearly General Meeting of this Company was held at the Charing Cross Hotel, London, on Tuesday, the 12th inst.—Mr. J. R. Holland in the chair.

The Secretary (Mr. Philip Verini) read the advertisement convening the meeting, and the following report and accounts were presented:—

Owing to the long and severe winter and the wet spring and summer, the applications for water during the last six months have not been so numerous as they would otherwise have been, and the increase in the rates has consequently only amounted to £75 19s. 4d. for the half year; nevertheless, the increase of revenue for the year ending June 30, 1879, as compared with the previous year, amounts to £1022 12s. 10d.

The Directors regret having to announce the death of their late esteemed and valued Chairman, Lord Malden, to whom, for his constant services and personal interest in the work, the Company had reason to be so deeply indebted.

They are pleased to be able to announce that their colleague Mr. Holland, has accepted the vacant post.

Capital Account on June 30, 1879.

Dr.		Cr.	
Capital—		Expenditure as per last account	£121,140 16 11
10,000 shares, at £10 per share paid-up 25 new shares, at £10 per share paid-up	£100,000 0 0	Expenditure for half year ending June 30, 1879	355 6 2
	250 0 0		£121,496 3 1
Debentures	25,000 0 0		
Loan	1,500 0 0	Balance carried to general balance	5,253 16 11
	£126,750 0 0		£126,750 0 0

Revenue Account for the Half Year ending June 30, 1879.

Engine working expenses, viz.:—		Water-rates	£1,323 2 4
Fuel	£135 5 2	Rent of water-meters	39 2 9
Oil	6 8 0	House services, &c.	31 7 3
Tallow	8 3 6	Interest	0 0 0
Waste	1 12 6	Transfer fees	1 5 0
Sundries	3 6 0	Sale of gravel and refuse lime	34 1 7
Wages	213 8 10	Balance	110 3 11
Pipe system expenses and repairs	79 3 6		
Lime	58 14 4		
General working expenses	48 9 10		
Stable expenses	9 4 7		
Meter repairs	1 17 9		
Salaries to Secretary and other officials	177 2 0		
Rent, &c.	43 10 7		
Stamps, stationery, and printing	26 2 5		
Sundries and petty expenses	20 9 5		
Advertising and incidental charges	15 0 6		
Law expenses	14 2 8		
Commission to Collector	32 14 11		
Rates and taxes	23 14 4		
Interest	620 12 0		
	£1,539 2 10		£1,539 2 10

The Chairman, after referring to the great loss sustained by the Company by the death of Lord Malden, the late Chairman, and warmly eulogizing the services of his lordship on behalf of the Company, directed attention to the accounts. Their Company, like so many other interests in the country, had, he said, unfortunately been affected by the unfavourable weather. The weather had stopped building operations, and consequently the water generally supplied by the Company for building

purposes had not been so great as might have been expected, and with the rain water people did not think it necessary to lay on the Company's water, or make special arrangements for watering their gardens. There had also been many damages to their pipes, either bursts or leakages, which had all involved repairs. No doubt the two months of severe frost in the winter had affected the pipe system considerably. The repairs had not been put out to contract, but had been done by themselves, and he believed they had been carried out as cheaply as possible. These were the unfavourable features, and consequently the Company's rates had not increased as they would have done, as the people had not come forward for the water. If, however, they compared the year ending the 30th of June last with the year ending the 30th of June, 1878, they would find a considerable increase in the rates—£993 16s. 11d.—not £1022 12s. 10d., as stated, through a clerical error, in the report. He thought this increase was satisfactory, although, of course, they would have been glad if the increase had been rather more rapid. They believed, however, that two-thirds of the rateable value of houses in the district remained to be supplied, and when the people occupying these houses came forward for the Company's water, their condition would be very considerably changed. In some quarters the policy of the Company in carrying out extensions had been somewhat criticized; but they found that they had amply repaid themselves on the outlay of £20,000 (the cost of the extensions to Edgware, Mill Hill, Kingsbury, Pinner, and Aldenham), they had received over 5 per cent., and, consequently, the position of the Company would have been worse but for these extensions. As to the quality of their water, it must be very satisfactory to them to know that it remained as excellent as it could be. A great deal was said now-a-days about the water supply of London, and a reference to Dr. Frankland's reports would show that the supply which London received was quite unworthy of what the supply ought to be to a great capital. On the other hand, his reports on the Colne valley water were extremely satisfactory. He found from Dr. Frankland's report for the 12th of June that the total solid matter in most of the London Water Companies was from 23 to 45 per cent., while that of the Colne Valley Company was only 12 per cent.; and with regard to hardness, while, in the case of most of the Companies, it was 18 and 19 per cent., and in the case of one Company 28 per cent., in the Colne Valley Company it was only 5 per cent. He, therefore, thought they might congratulate themselves that the scheme they initiated—of giving a supply of really good and excellent water—had been carried out in a perfectly satisfactory manner. He concluded by moving—"That the report be received and adopted"

Mr. Monro, in seconding the motion, said he was sure that the meeting would agree with what had fallen from the Chairman respecting the quality of the Company's water. Had the water-rates been actually received—the £1323? because he imagined, from another entry, that £1074 was still owing. He thought the Shareholders ought to congratulate themselves on having such a zealous Board. He quite agreed that the Company compared most favourably with the Metropolitan Water Companies as to their supply; still, he held that the water supply of London was extremely good.

The Chairman, in reply to questions, said their bad debts amounted only to a few shillings, and therefore it had not been thought necessary to make any special provision for them. Respecting the sale of gravel and refuse lime, it had been impossible to work the gravel owing to the wet. Of the £1074 due for water-rates, over £500 had since been received. The rates were due on the 24th of June, and the accounts made up to the 30th of June, so only six days were allowed for getting them in. With regard to outstanding accounts, all accounts owing by the Company to the 30th of June had been paid.

The report was unanimously adopted.

On the motion of Mr. Monro, seconded by Mr. Patent, a vote of thanks to the Chairman and Directors was carried unanimously.

Mr. J. F. Bateman, C.E. (a Director) said he had been asked to say a few words on the prospects of the Company, and he believed they were bright and brilliant. The Company were giving what the working men assembled in the previous week in Exeter Hall asked for—a constant supply of water at high pressure; and not only that, but soft water. He gave some statistics at the meeting referred to in order to show that, if London were supplied with water like that which Glasgow received from Loch Katrine, or that which the Colne Valley Company supplied, the saving to the population of London at large would be something like £300,000 or £400,000. The saving in soap alone, to say nothing of the wear and tear in clothes, would not be less than 2s. per head. When soft water from Loch Katrine was introduced into Glasgow, the saving was five-eighths of the soap previously used. The rates there were then about £36,000 a year to a population of some 400,000, and the saving effected was equal to the whole rate, so they had the water from Loch Katrine for nothing. That was not all, for, as Sir James Bain, the late Lord Provost of Glasgow, said, at the opening of the Queen's Dock, in that city, about two years ago, the rate (the domestic rate) had thus been reduced from 16d. to 8d. They paid the whole rate by the saving which was effected, and, therefore, they saved not only the difference between 16d. and 8d., but the whole—altogether 2s. By introducing soft for hard water in his own house, he saved from 4s. 6d. to 5s. per head. London could save at least 2s. a head, which, on a population of 4,000,000, was £400,000—let them say £300,000; and they could very well afford to soften the water supplied to London from the chalk by an outlay of £300,000, and they would save all the expense. That was merely as far as soft water was concerned. The Colne Valley Company were setting an example in this respect, and their water was infinitely superior to that of any London Water Company. The district was very pretty, and had many attractions for those who wished to enjoy a country life, and, at the same time, carry on their business or profession in the City of London, and he hoped in time it would attract a great many people. He saw that in the last half year the Company were £110 to the bad, or £220 in the year, but if they went on increasing up to the rate of £1000 a year, they might expect in another year not only to have turned the corner, and paid all expenses, but have a surplus, to be dealt with as the Shareholders might think fit. He looked forward, therefore, with great confidence to the future of the Company.

The Chairman returned thanks for the compliment bestowed upon himself and the Board, and said they were all anxious to do what they could for the Company, and make it a complete success.

The meeting then separated.

Gas-lighted Buoys.—The Trinity Board have recently given public notice that it is their intention shortly to place experimentally two buoys lighted by gas at the entrance to the River Thames—one near the Mouse Light vessel, and the other near the Sheerness middle buoy.

Association of Municipal and Sanitary Engineers and Surveyors.—The ballot for the President of this Association for the ensuing year, rendered necessary by the votes of the members being equally divided between Mr. G. F. Deacon, the Borough Engineer of Liverpool, and Mr. E. Pritchard, C.E., F.G.S., of Warwick, has resulted in the election of the latter gentleman.

BOLTON CORPORATION GAS SUPPLY.

The following is a statement of the accounts of the Gas Department from July 1, 1878, to June 30, 1879:—

Dr.—Capital Account.

To Amount expended on the works to this date			£470,132 10 1
Amount expended this year, viz.:—			
Mains	£1,911 16 4		
Hired meters	1,051 19 7		
Land and buildings	318 2 7		
Apparatus	152 16 5		
	£3,434 14 11		
Cr. by old metal sold	109 6 8		
		3,325 8 3	
		473,457 18 4	

Cr.—Capital Account.

By Transfer from renewal-fund for buildings and apparatus replaced	£8,529 0 0
Transfer from renewal-fund for depreciation on hired meters	1,234 0 0
Balance carried down	463,694 18 4
	£473,457 18 4

Dr.—Revenue Account.

	Year ending June 30, 1879.	Year ending June 30, 1878.
To Cannel and coal consumed	£37,272 0 7 ..	£28,199 18 1
Wages for gas manufacture	5,397 2 10 ..	5,345 17 3
Lime and purifying	1,563 13 5 ..	1,562 10 10
Retorts, materials, and labour	1,249 17 8 ..	1,124 13 0
Repairs of iron and brickwork	3,491 1 6 ..	2,783 4 7
Water	196 11 8 ..	120 4 2
General expenses	544 2 5 ..	383 13 5
Salaries	2,948 5 4 ..	2,993 12 0
Rates and taxes	1,943 13 4 ..	1,176 2 3
Chief rent	142 16 4 ..	143 13 4
Office expenses, stationery, and printing	543 15 3 ..	480 4 5
Law charges	25 16 9 ..	34 17 9
Bad debts	465 11 3 ..	198 11 3
Meters and fittings	4,860 16 10 ..	5,424 0 3
Chemicals	1,862 10 10 ..	1,572 13 6
	£52,507 16 0 ..	£51,543 16 1
Balance carried forward	36,375 10 1 ..	33,421 18 5
	£88,883 6 1 ..	£84,965 14 6

Cr.—Revenue Account.

	Year ending June 30, 1879.	Year ending June 30, 1878.
By Gas rental	£65,456 0 5 ..	£64,682 17 5
Meter-rents	1,217 14 4 ..	1,068 13 0
Meters and fittings	6,350 3 2 ..	6,288 9 9
Coke	4,495 18 3 ..	3,540 17 5
Tar	4,148 18 3 ..	3,204 2 8
Spent lime	212 6 9 ..	185 5 11
Ammoniacal salt	6,166 10 11 ..	5,699 6 5
Rents	119 14 7 ..	116 7 10
Sundries	25 4 6 ..	23 4 1
Bank interest, less commission	684 2 5 ..	146 10 0
Transfer fees	6 12 6 ..	5 0 0
	£88,883 6 1	£84,965 14 6

Revenue Account (continued).

Dr.		Cr.	
Annuities account	£14,460 5 2	Balance brought forward	£36,375 10 1
Interest on loans account	5,068 6 4		
Sinking-fund account	883 9 0		
Renewal-fund account	7,864 0 0		
District-rate account	8,099 9 7		
	£36,375 10 1		£36,375 10 1

Renewal-Fund Account.

Expenditure for the year	£13,420 10 5	Balance at this date	£12,369 5 10
Balance carried down	6,812 15 5	Transfer from revenue account	7,864 0 0
	£20,233 5 10		£20,233 5 10
		Balance brought down	£6,812 15 5

Proof Balances.

Assets.		Liabilities.	
Works and plant account	£463,694 18 4	Annuities capitalized account	£361,506 2 11
Amount owing to Gas Committee	12,125 11 11	Loans account	129,160 0 0
Stock of cannel and coal	1,775 3 0	Renewal-fund account	6,812 15 5
Do. coke	120 0 0	Deposit account	5,628 1 4
Do. ammoniacal salt	166 5 0	Amount owing by Gas Committee	1,802 11 7
Do. retorts	75 0 0	District-rate account	8,099 9 7
Do. old metal	30 0 0	Mortgage debt extinguished by sinking-fund	2,512 0 0
Do. lime	14 10 0		
Do. meters	182 19 0		
Do. fittings	4,442 8 10		
Balance at Bankers	32,894 4 9		
	£515,521 0 10		£515,521 0 10

	Year ending June 30, 1879.	Year ending June 30, 1878.
Gas made in the above year	428,394,000 cub. ft.	407,380,000 cub. ft.
Gas sold and used in the works	388,469,000 ,,	373,680,000 ,,
Loss	39,925,000 ,, or 9·31 per cent.	33,700,000 ,, or 8·27 per cent.
Cannel and coal carbonized	40,850 tons.	39,204 tons.
Make of gas per ton	10,487 cub. ft.	10,391 cub. ft.

The Quarterly Meeting of the Bolton Town Council was held on Wednesday, the 13th inst.—the Ex-Mayor (Alderman Greenhalgh) presiding.

Alderman Moscrop, in moving the adoption of the minutes of the Gas Committee, referred to the past twelve months working of the gas undertaking. He said it would be found that on capital account the amount expended up to June 30, 1878, was £470,132 10s. 1d. Since that period there had been expended on mains, £1911 16s. 4d.; on hired meters, £1051 19s. 7d.; on land and buildings, £318 2s. 7d.; apparatus, £152 16s. 5d., less old metal sold, £109 6s. 8d.; making a total of £473,457 18s. 4d. On the credit side of the capital account there was an unusual entry based on the resolution of the Gas Committee, passed on Nov. 22, 1878, which he would read: "The cost of the alterations and additions at Lumb Street works having been £32,000, resolved that one-third of this amount be paid out of renewal-fund—£10,735, less amount already charged to that fund (£2206), equal to £8529. The fact that, during the six years the gas-works have been the property of the Corporation, the sum of £12,940 has been expended on hired meters, and, in respect of which there has been no allowance for depreciation, resolved that 10 per cent. of this amount—£1234—be transferred from renewal-fund to the credit of capital account, making a total of £9763, being a balance to be carried down of £463,694 18s. 10d. to revenue

account." On the credit side it would be found that the gas-rental during the year amounted to £65,456, as against £64,682 17s. 5d. last year, or an increase of £774. On other items, such as meter-rents, meters, and fittings, there had been a large increase as compared with last year. The total amount of income was £88,883 6s. 1d., as against £84,965 14s. 6d. On the debit side of the revenue account, the first item was cannel and coal consumed, £27,272 0s. 7d., as against £28,199 18s. 1d. last year. So it would be seen that although the gas-rental had increased £774, the amount paid for cannel and coal had been less by £927. He found that rates and taxes this year were £767 more than last year, and he believed this arose from the fact that income-tax had had to be paid for two years instead of one, pending some arrangement between the Revenue Office and the Treasurer's office. The profit on meters and fittings amounted to £1489, as against £864 last year. The amount of balance carried forward on revenue account was £36,375 10s. 1d., as against £33,421 18s. 5d. The amount of gas consumed this year was 388,469,000 cubic feet, as against 370,680,000 cubic feet last year. He thought it was a matter of satisfaction, remembering the extremely depressed state of trade which still continued, that the amount of gas made and sold during the past year had exceeded that of the previous year. In fact, the amount of gas consumed last year was greater than that of any previous year in the history of the gas-works. The quality of the gas still retained its reputation as regarded its illuminating power. It had averaged during the year over 18 candles, as against what it was about two years ago, when it was 16½ candles—about 9 per cent. better than it was previously. It still maintained that quality, and its purity too. He hesitated not to say that the system of testing the purity of the gas was such as to inspire confidence, and it was a fact that at the present time the gas was entirely free from sulphuretted hydrogen. Some five or six months ago the centre purifier went wrong, and the gas was not then so pure, but that arose from circumstances over which neither the Committee nor the Manager had any possible control. The amount—he thought he might call it a handsome amount—of £36,375 10s. 1d. balance in favour of the revenue account, was thus distributed: To annuities account, £14,460 5s. 2d.; interest on loans account, £5068 6s. 4d.; sinking-fund account, £883 9s.; renewal-fund account, 2½ per cent. on capital, £7864; district-rate account, £8099 9s. 7d., which, he thought, was £2369 more than the Chairman of the Finance Committee gave them to understand was to be expected. He then referred to the remarks of the Chairman of the Finance Committee at the previous Council meeting, as to 2½ per cent. being set aside for renewals. The Chairman of the Finance Committee appeared to think that 2½ per cent. so set aside on renewal account was not only ample, but more than ample—that it was really an extravagant amount, and much more than was allowed on buildings generally, and he could not see why the Gas Committee should not be treated like mercantile firms as regarded their buildings. Another remark was that the mains of the gas-works which had been established for about 60 years, were as good as ever; that they were impervious to water, and did not corrode, the inference being that they would last in perpetuity. He (Alderman Moscrop) was only sorry that the Chairman of the Finance Committee was not a member of the Gas Committee. If he were about to be a member of that Committee, he would have the opportunity of ocularly demonstrating that the mains corroded very soon, and very materially, and not from internal but external causes. It was a remarkable fact that all about Bolton there was so much filled-up subsoil, that when the mains had been in a few years—he spoke now upon the authority of the foreman of the main-layers, who had brought pipes repeatedly to the gas office—they became actually honeycombed right through. In fact, in some instances the mains were so destroyed by pernicious and gaseous substances acting upon the metal, that the ground which had been displaced by the pipes had been the only conduit for the gas to pass through. He submitted that a more correct analogy in that instance would be not to compare gas-works to ordinary mercantile firms, but to compare gas-works with gas-works. He had in his hand a printed abstract of the last accounts of what he might safely say was the oldest, the most extensive, and the most successful corporation gas-works in the kingdom. He merely mentioned them in contrast with the generous allowance which it had been said they ought to be satisfied with. Those accounts showed that 4 per cent. on buildings, and 5 per cent. on apparatus, and 2½ per cent. on main-pipes, and 10 per cent. on hired meters and fittings was allowed. The depreciation of works for the last year amounted to no less a sum than £25,194 19s. 6d. He alluded to the Manchester Corporation Gas-Works. It was rather remarkable that although the Manchester gas-works produced five times more gas than they did in Bolton—he thought the production last year was upwards of two billion feet of gas—and notwithstanding that the Manchester Gas-Works were so extensive, and their revenue so large, their liabilities were considerably less than those of the Bolton Gas-Works.

Mr. GREENWOOD seconded the motion, and the minutes were confirmed.

BINGLEY COMMISSIONERS GAS SUPPLY.

From the report of Mr. G. D. Malam, the Manager of the Bingley Improvement Commissioners Gas-Works, upon the principal operations carried on in connection with the works, and the results derived therefrom during the financial year ending June 21, 1879, it appears that the quantity of coal and cannel carbonized was 3376 tons, producing 32,504,600 cubic feet, and the average yield and sale per ton of coal had been increased as compared with the year immediately preceding, the respective figures being as follows, viz.:—Gas extracted per ton of coal during the year 1879, 9627 cubic feet; ditto, 1878, 9518 cubic feet; gas sold per ton of coal during the year 1879, 9288 cubic feet; ditto, 1878, 9169 cubic feet. There was an increased sale of gas last year over the preceding one amounting to 2,015,600 cubic feet, the absolute quantity of gas sold last year having been 31,356,000 cubic feet, as against 29,340,400 cubic feet the previous year. During the course of last year 130 additional consumers were placed on the books, and in order to supply them an expenditure on capital account for mains, meters, service-pipes, labour, and fittings, amounting to £367 8s. 10d., was incurred. The leakage of gas was reduced to 3·53 per cent., 255,700 cubic feet having been rescued from leakage last year, as compared with that of the previous year, whilst the saving effected as compared with the year 1875 was 3,051,600 cubic feet, the money value of which, taking the cost to the Commissioners of delivering it to the consumer's meters at 1s. 4d. per 1000 cubic feet, was £214 7s. 6d. Loans to the amount of £300 were paid off out of gross profits, and from the same source £1010 14s. 4d., due to the Bankers for the payment of the Cottingley extensions, was liquidated during the year. By the payment of £250 to the improvement rates, a part of the £2236 levied by the direct rates upon the ratepayers in the years from 1869 to 1872, for the purpose of upholding the sinking-fund at its legal fixture was cleared off, and it is intended to pay £500 annually to the Commissioners until the whole sum is paid, which is practically equal to a reduction in the price of gas of a little more than 5d. per 1000 cubic feet, so that the gas consumers in the improvement limits will in reality be paying only 3s. 4d. per 1000 cubic feet, with a further reduction of discounts according to their consumption of gas and prompt payment. There was an increase in the number of public lamps from 178 to 185, and the cost of gas supplied to them was, for 1879, £438 6s. 7½d., as against £416 6s. 10½d. for the preceding year. The rate necessary for raising the sum for the payment of the gas consumed by the public lamps is about 4½d. in the pound upon the Commissioners present rateable value.

The Accountant (Mr. J. Pearson) reported that the profits from the gas-works for the past financial year were £1986 13s. 11d., after the payment of interest upon loan capital amounting to £1565 5s. 7d., bankers commission and interest, the maintenance of the whole of the manufacturing, distributing, and storeage plant out of the revenue, and the repayment of £250 towards the rates. As the sinking-fund absorbs £395 of these profits, there would, after voting £500 towards repayment of the debt due to the Commissioners, be a net surplus of loan capital and for general trading purposes amounting to £571 13s. 11d. The gross profits for the year, without deducting the £250 paid in liquidation of former rates levied for the sinking-fund, were £2236 13s. 11d., as against £1955 16s. 11d. the preceding year.

The following is an analysis of the accounts of the gas department for the twelve months to June last:—

—	Receipts.	Expenditure.	Cost per 1000 Feet Made.	Cost per 1000 Feet Sold.	Cost per 1000 Feet Made.	Cost per 1000 Feet Sold.
	£ s. d.	£ s. d.	s. d.	s. d.	s. d.	s. d.
INCOME.						
Consumers & public lamps } Feet. 31,356,000						
Leakage . . 1,148,600 or 3·53 p. c. on gas made.						
Total quantity made. } 32,504,600 feet . .	6295 3 0½	—	—	—	—	—
Residual products (coke)	627 18 0½	—	—	—	—	—
Tar and liquor	456 13 3½	—	—	—	—	—
Other receipts	133 12 1½	—	—	—	—	—
EXPENDITURE.						
Manufacture account—						
Wages—stokers, purifiers, & coalers	—	382 12 8½	0 2·82	0 2·92	—	—
Coal and cannel (3376 tons) & cartage	—	1620 2 1	0 11·96	1 0·40	—	—
Lime and oxide	—	70 19 8	0 0·52	0 0·54	—	—
Tools and materials	—	60 0 0	0 0·44	0 0·46	—	—
Maintenance account—						
Wages account	—	477 19 7	0 3·52	0 3·65	—	—
Maintenance, repairs, mains, services, retorts, roof, boiler, &c. .	—	189 6 8	0 1·39	0 1·44	—	—
Management—						
Salaries	—	335 0 0	0 2·47	0 2·56	—	—
Rates and taxes.	—	156 13 8	0 1·15	0 1·19	—	—
Interest on loans	—	1565 5 7	—	—	0 11·61	0 11·98
Sinking-fund	—	915 0 0	—	—	0 6·75	0 7·00
Balance	—	1740 6 6½	—	—	1 0·85	1 1·32
	7513 6 6	7513 6 6	2 0·27	2 1·16		
Less residual products, £1084 11s. 4d.			0 8·00	0 8·30	—	
			1 4·27	1 4·86		

Gas sold per ton of coal carbonized, 9288 feet; average illuminating power, 16·75 sperm candles.

At a meeting of the Commissioners on Monday, the 11th inst., the Gas Committee's minutes, recommending that a vote of thanks be given to Mr. G. D. Malam, the Gas Engineer, for his efficient services in the management of the gas-works during the past year, were agreed to. It was also resolved that £600 should be granted out of the gas revenue towards the improvement rates, and upon a division, by 7 votes to 3, that 3d. per 1000 cubic feet should be allowed to every consumer who pays his account by the 1st of September.

EXTENSION OF STOREAGE AT THE CARLISLE CORPORATION GAS-WORKS.

On Monday, the 11th inst., the opening ceremony in connection with the new holder recently completed at the Carlisle Corporation Gas-Works took place. The site of the new holder, Boustead's Grassing, is at some future day intended to receive the entire gas-works, the transfer being made from the old site by degrees, as circumstances may call for it. At present it is some 600 or 700 yards from the works where the gas is made, the connection between the two being by an 18-inch main. Ultimately the two places will change their relative positions—the existing holders at the old works being kept for storeage, while the manufacturing station will be at Boustead's Grassing.

Amongst those present were the Mayor (Mr. Milburn), the Chairman of the Gas Committee (Mr. R. Forster), the Vice-Chairman (Mr. Wilson), Mr. Wannop, Mr. Charles Armstrong, Mr. B. Scott, Mr. John Scott, Mr. Palmer, Mr. Blair, Mr. Gardhouse, Mr. Moss, Mr. Short, Mr. J. Hepworth (the Engineer of the works, and under whose plans and specifications the whole of the operations were carried out), Mr. White, &c.

Mr. FORSTER said that the business of the day was of a very agreeable character, and especially so to the Gas Committee, who had at length reaped the fruit of their labours after much anxiety and effort. The last gas-holder extension was made in 1872, when the largest holder was doubled in size. But the necessity for further storeage capacity soon became manifest, and had existed for several years, great difficulty being occasionally experienced in maintaining the supply of gas to the town. As soon as a site was fixed upon for the new holder, the Committee gave instructions to their Manager to prepare plans and set about obtaining contracts. During the progress of the work many difficulties had cropped up, but now they had all been overcome, and the work had not only been completed, but completed in a manner which must be satisfactory to the public as it had been to the Gas Committee.

Mr. HEPWORTH then read a brief description of the work. The tank is 124 feet in diameter, by 31 ft. 6 in. in depth, and is constructed wholly of concrete, the material used being sand, gravel, and Portland cement. The strata passed through in excavating were—a layer of soil, 8 inches deep; loam clay, 2 ft. 3 in. deep; gravel, 10 ft. 6 in. deep; and then red sandstone was come upon. Water was met with at a depth of 7 feet from the surface, and a well had to be sunk at a lower depth than the tank, so as to keep the latter clear of water, and two powerful pumps were employed in raising the water during the whole time of the erection, the quantity of water pumped at one period being at the rate of 50,000 gallons per hour. The tank walls vary in thickness from 5 feet to 2 ft. 6 in., and the piers are 6 feet square. The cone of earthwork left in the centre is covered by 18 inches of concrete, and all the interior of the tank has been rendered in pure cement, trowelled to a fine surface throughout. The holder is telescopic, with two lifts. It is 120 feet diameter, by 60 feet in height, supported by massive cast-iron pillars 62 feet high, two rows of wrought-iron girders, and diagonal stays—the total weight of iron employed being 400 tons. The holder, when full, contains upwards of 650,000 feet of gas, and is connected with the old works by an 18-inch main. The

contract for the tank was let in February, 1878; the foundations of the walls were laid in June the same year; and the holder was begun in October. The entire cost of the new holder is about £10,000. The following inscription is prominently placed upon the tank:—

"Carlisle Corporation Gas-Works,
1879.
T. Milburn, Esq., Mayor.
R. Forster, Esq., Chairman of the Gas Committee.
J. Hepworth, Engineer.
Ashmore and While, Contractors."

The Mayor, having turned on the gas at the main, made a few remarks. He said he remembered the foundations of the gas-works being laid some 33 or 34 years ago, and gave some assistance in their construction. There was a remarkable contrast between the appliances existing at that time and those now available for the work. He remembered that the river overflowed its banks two or three times, though it was summer, and the tanks being flooded, they had only horse power to cope with the inundation, such a thing as steam power not being in existence. It gave him great pleasure to be present, more especially as he took a leading part in getting the additions to the gas-works settled down on the present site. Probably those who took a different view had as strong an opinion that he was wrong; but as the work had progressed, he thought all would admit that the new site was everything that could be wished for. He was rather sceptical when the contract was first let, seeing that this was the first tank of any large size in the northern district which it was proposed to construct entirely of concrete. He had seen tanks of asphalte, which had failed; and he certainly had his doubts whether a tank of concrete would prove altogether satisfactory, his own impression being that bricks and cement would be best. He was happy to think, however, that they adhered to the advice of their Manager in the matter, because, so far as he could see, the work was of a most substantial and strong character, and must give satisfaction to every one connected with it. He would only add that this gratifying termination of the work must be a great relief to Mr. Hepworth, who must have had a most difficult time of it.

Three cheers were given, and the ceremony was brought to a close.

By the invitation of the Chairman of the Gas Committee, the company went to the County Hotel, where light refreshments were provided, and Mr. Forster proposed the health of the Mayor. In responding, the Mayor proposed the health of the Chairman of the Gas Committee, who was to be congratulated, he said, on the completion of a work of such magnitude.

Mr. Forster acknowledged the compliment, and proposed the health of the Manager, whose engineering knowledge and practical ability had, he said, been of the utmost advantage, not only in this work, but in all the Corporation gas affairs.

Mr. Hepworth, in replying to the toast, made reference to the Mayor's remark that this was the first concrete tank in the North of England. He was perfectly well aware that it was an experiment. It was an experiment which was first made about seven years ago by Mr. Livesey at the South Metropolitan Gas-Works, and, since then, Mr. Livesey had never constructed any other than concrete tanks. His works, like the ones at Carlisle, were situated on a bed of gravel and sand, under which came the London clay. Knowing that at Carlisle there were gravel and sand, he (Mr. Hepworth) asked himself, what so easy as to make a concrete tank, for, if it be possible, it could be done at less cost than if of any other material. He had no hesitation in saying that they had done it for £2000 less than any other material would have cost, and henceforth, whatever new holders they had to erect, they would construct the tanks of concrete, which had proved to be perfectly reliable. He proposed the health of all who had taken part in the work, coupled with the name of the Clerk of the Works, Mr. White.

Mr. White having responded, the proceedings shortly afterwards came to a close.

GAS UNDERTAKINGS AND THE ELECTRIC LIGHT.

In the *Manchester Evening News* of Monday, the 18th inst., an article appeared which displayed, if anything, rather more than the usual amount of ignorance of facts observable when writers in the general public press treat of special subjects—such as gas supply. For instance, the writer of the article referred to says: "One of the largest gaslight and coke companies in London has obtained powers to illuminate the Metropolis by means of electricity;" which is not a fact. He then goes on to remark: "Nothing much has been done as yet; but it is a significant sign of the times that such should be the case." A quotation follows from a London daily newspaper report of the speech of the Governor of The Gaslight and Coke Company at the half-yearly meeting of Shareholders held on the previous Friday, when, referring to the improved system of street lighting carried on at the expense of the Company, he said: "It is now proved that if the public like to pay for it, we can give them a better light than the electric light ever will, and at a very much reduced price." On this the writer remarks: "The views expressed by the Hon. Richard Howe Browne strongly suggest the idea that he is not entirely unacquainted with the adage, 'There's nothing like leather!' It would be difficult for the chairman of a gas company which, in bad times, pays 10½ per cent. to see anything through the medium of the electric light. And yet the efforts made and the powers acquired by the Company are calculated to excite doubts, if not of the sincerity of the belief expressed, at least as to the wisdom of the conclusions on which it is based. It is absurd to suppose that the question can be shelved, or that scientific research should fail to discover means whereby electricity may be turned to further account in the interest of mankind. The world continues to move, whatever prejudice and self-interest may assert to the contrary."

It would be difficult to find more misstatements and misrepresentations in any column of type than appear in the article in question, and it must surely be viewed as a lamentable circumstance that the leading columns of a newspaper, having the wide circulation of the *Manchester Evening News*, should be open to writers displaying so much ignorance of the subject of which they treat.

Mr. Newbigging, however, in a letter which appeared in the *Evening News* the next day and which we reproduce, ably replied to the article; and it would be well if gas engineers and others throughout the country, following his example, would make a point of writing and setting the true facts before the public, when remarks calculated to convey so erroneous an impression as the ones we have referred to, are published in local newspapers.

Mr. Newbigging's letter is as follows:—

To the Editor of the *Manchester Evening News*.

Sir,—I regret that I should have occasion to differ with many of the remarks contained in the last leading article of the *Evening News* of this day, treating of gas companies and the electric light. The tendency of such statements, if left unrefuted, is bad, and especially so in the present instance, for, under a show of encouraging and assisting the progress of scientific discovery and improvement, the claims of truth and justice are entirely ignored.

The writer expresses the belief that gas undertakings "are unlikely to be of much service in a few years hence." Has he given the slightest consideration to the result which would ensue supposing his prognostication to be fulfilled? At the lowest computation there is expended on gas undertakings in the United Kingdom alone no less a sum than £60,000,000, representing an investment of at least £110,000,000 sterling; the shares or stock to that amount are held principally by the middle classes of the community, and are a measure of the thrift and self-denial of which we, as a nation, have good reason to be proud. A large proportion of the investment is in the hands of, or in trust for spinsters, widows and minors, and aged persons, whose whole or chief means of subsistence is derived from the interest they thus receive. The result of gas-works becoming "useless in a few years hence" would be to plunge vast numbers of the most deserving of the population in penury and distress, and this surely, even if the interests of science demanded it, would be a matter for deep commiseration.

But there might be some show of justification for even such a calamity as this, if it could be proved that gas directors and the officials of gas companies, as a whole, are the grasping and unscrupulous knaves they are sometimes represented to be. Take the Metropolis as an example, the Gas Companies of which the writer of the article holds up to scorn and contempt. "The Metropolis," he says, "is placed in a miserable position as regards a supply of gas, and before long public indignation may rise to such a height as to render it necessary to take the illumination of London out of private hands." I deny the preposterous charge, and challenge the writer to make good his assertion. The gas supply of London is of the most ample and generous character. In this respect, as is well known, it is one of the wonders of the civilized world. The purity clauses in the London gas Acts are the most stringent in existence; in no provincial or foreign town is anything like the same surveillance exercised. Does the writer of the article refer to the illumination of the streets? Then he is surely unaware that the public lighting is managed and controlled by the Corporation and the Vestries, and all that the Companies are required and permitted to do is to furnish the necessary quantity of gas of a given illuminating power, whilst the size and number of lights in the streets are matters respecting which they have no voice, and are not allowed to interfere. In all vast industrial enterprises there will arise occasional causes of distrust and disagreement, but, taking gas undertakings all round, whether in the hands of corporations or companies, they are not excelled in their management by any other industry in existence. Of the London Gas Engineers (and they, after all, are the responsible purveyors of the gas of the Metropolis) I can say from personal knowledge, and without fear of contradiction, that they are men who, for ability and integrity, are an honour to their profession.

But what has all this to do with the electric light? Surely we can be gas shareholders and gas *employés*, and even gas directors, without being inimical to the progress of science. That the electric light will eventually supersede gas light is, in the absence of the prophetic faculty, a mere matter of opinion. I am of opinion that it never will, either for general street purposes or for domestic lighting, and I have elsewhere given substantial reasons for my belief. The electric light has its uses, but they are in no way antagonistic to those of gas light. The writer of the article quotes the illuminating of Billingsgate Market as a successful application of electric lighting. He could not have selected a worse example, for after repeated trials the light there was condemned on every hand by both dealers and customers, and was almost angrily hustled out of the place, and the familiar gas light reinstated. Again, the writer is quite beside the mark in his statement that "one of the largest gas light and coke companies in London has obtained powers to illuminate the Metropolis by electricity." The truth is, that of all the gas companies in Parliament during the year, not one of them had powers granted for supplying the electric light, although it would, in my opinion, have been altogether in the interest of science if they had. The Liverpool Corporation obtained powers to experiment upon and use the light under certain restrictions; but it is safe to predict they will never take advantage of the powers granted to them. Private enterprise alone can be trusted to undertake work of this kind, and we have private enterprise to thank entirely for the cheap and abundant blessing of gas light.

Thomas Newbigging,
President Manchester District Institution of Gas Engineers.
5, Norfolk Street, Manchester, Aug. 18, 1879.

THE LANCASHIRE COAL AND IRON TRADES.

(FROM OUR OWN CORRESPONDENT.)

There has been little or no material change in the condition of the coal trade of this district during the past week or two. All classes of fuel have been meeting with a very slow sale, colliery proprietors not securing orders sufficient to keep their pits going more than six to seven days a fortnight, and as there is not very much stock being put down, a great deal of short time is being worked throughout this district. All classes of round coal are bad to sell, and although in the better sorts there is a little buying for winter stocks the general demand shows no material improvement. There are now but few inquiries in the market for gas-making qualities, and most of the contracts likely to be given out this season are now settled, whilst the inferior descriptions of round coal for iron-making and steam purposes still meet with an extremely limited demand, owing to the continued depression in trade throughout this district. Prices are still weak, and very irregular; the best qualities of Arley can be bought in bulk at from 8s. to 8s. 6d. per ton at the pit, the common sorts at any price from 6s. per ton upwards, and Pemberton four-feet coal at from 5s. 9d. to 6s. 6d. per ton. For common classes of round coal it is difficult to give anything like a fixed price, some qualities ranging as low as 4s. 6d., and the better sorts about 5s. 3d. to 5s. 6d. per ton at the pit. Although the better classes of slack are now rather scarce at some of the collieries, engine fuel generally continues plentiful in the market, and prices are no higher. Burgy at the pit mouth is quoted at from 3s. 9d. to 4s. 3d. per ton, good slack at about 3s. to 3s. 3d., and common sorts from 2s. per ton upwards.

There is still only an indifferent business doing in the shipping trade, and prices continue very low.

In the iron trade the change, if any, has been slightly for the better; and although there has been no very material increase in the actual amount of business doing, local makers of pig iron report that they have been receiving more inquiries, which, it is thought, will result in some fair orders being placed before long, and prices have had a tendency to stiffen, makers being unwilling to quote below their list rates of 43s. 6d. per ton for No. 3 foundry, and 43s. for No. 4 forge, less 2½ delivered into Manchester. Finished iron makers have been receiving a few more orders, although they have been small in weight, and good ordinary Lancashire bars delivered into the Manchester district are quoted at £5 5s. to £5 10s. per ton.

THE COAL AND GENERAL TRADES OF THE NORTH OF ENGLAND.

(FROM OUR OWN CORRESPONDENT.)

The gas coal trade of the North has gone on steadily over the past two weeks. The shipments have been comparatively large. All the best pits have been working full time; most have shipping turns of about a week.

Two or three leading collieries go beyond that date. Turns at second-class pits are considerably less. Most of their turns are immediate; indeed, the shipments to the Baltic have been active. A good few gas coals have also been shipped to the Mediterranean, to Italy, Spain, and the Adriatic generally. The coasting shipments of best sorts have got better. A fair amount of business has been done in gas to Ireland. The price of Durham gas coals is practically unchanged. For the moment nearly all the best pits have as many orders on hand as they can stand to. The sales and contracts entered upon for the autumn and winter deliveries have been made at moderate prices for the highest qualities of gas coals, which, to some considerable extent, cut second-class coals out of the market for shipping purposes. But as the nights begin to lengthen, and the consumptive demand increases, gas coals of moderate quality have a better position in the open market. Third-class low-priced gas coals are not much looked at. It is expected that they will have a better position next month. As we have reported previously, the prices of best gas coals run on pretty uniformly. The bulk of them are sold under contracts, and no great quantity goes off in single cargoes. Market values cannot, therefore, be judged by the sale of odd cargoes, but by the price at which gas coals are sold under contract. These rates do not transpire in the open market. They lie somewhere between 6s. and 6s. 6d. net per ton—coal-pitters state nearer the latter than the former rate; but to the outside public it is a matter of guess.

The freight market continues to be fairly active. There is very little unemployed steam tonnage in the northern coal ports. Rates are well maintained. Sailing vessels continue to do poorly, however. Steamers nearly monopolize the London business. What little freighting was done for the Thames last week by small sailers was at 4s. 9d. and 4s. 10½d. per ton to discharge steam coals at the wharves. The figure paid to small sailing vessels to load steam coals for the lesser Channel ports was from 5s. 9d. to 6s. per ton. Absolutely nothing is doing by sailing ships for the eastern counties. Some ships have been fixed to load gas coal for Ireland, at a figure represented by 6s. 1d., Dublin.

The price of lead is up 10s. to 15s. per ton, from last quotations. Copper has also risen in price. The Cleveland iron trade, too, is much stronger. The shipments of the better qualities of fire-clay goods and fire-bricks abroad are considerable. There is a fair demand for cement. The coke trade is rather slack.

TRADE NOTES FROM SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The annual general meeting of the Forfar Corporation Gas Commissioners was held last Monday night—Bailie Laird presiding. The Chairman, as convener, reported the views of the Committee as to fixing the rate for the year ending June 15, 1880. He said that the estimate of the income and expenditure for the year had been calculated on a reduction of the rate such as he had indicated at a former meeting—namely, 5d. per 1000 cubic feet. It was estimated that the revenue from gas manufactured and other sources would amount to £4982 7s. 5d., and the expenditure to £4662 14s. 3d., leaving an apparent surplus of £319 13s. 2d. The Bailie indicated several items on which it was believed that a saving might be effected, and said he felt sanguine that at the end of the year the estimate would be fully realized. He concluded by moving that the price of gas be fixed at 5s., as against 5s. 5d. per 1000 feet last year, and that, of the balance of £320, £250 be carried to the contingent-fund for the purchase of the new scrubber which the Committee had recommended should be purchased. There would still be left a surplus of £70. In answer to Mr. Grant, he said that £1451 had been carried to the sinking-fund, which was double the amount required by the local Gas Act. There, according to the Act, should have been placed £800 at the credit of the contingent-fund; but £1800, or more than double the required sum, had been placed at the credit of that account. Mr. Grant criticized the policy of lowering the price of gas, and he argued that the Commissioners had already exceeded their borrowing powers, and that they must still further do so if they were to have the contingent and sinking funds realities. Mr. Craik followed on the same lines, and questioned the Treasurer as to whether the interest paid by the Corporation was increasing or decreasing year by year. The Treasurer replied that it was increasing, because the contingent and sinking funds were increasing year by year, in consequence of which he had to debit revenue with higher interest, and credit those two accounts with the same. Mr. Whyte said if the statements put before them were correct, there would be no difficulty in reducing the price of gas as proposed; in fact, they had no power to deal with the surplus in any other way. The estimate must either be challenged or approved of. After some further discussion, the Committee's recommendation was approved of—Messrs. Craik and Grant dissenting.

On Tuesday last an ordinary meeting of the Police Board of Greenock took place, when the annual accounts of the gas supply undertaking were brought forward for consideration. From the abstract statement of the accounts up to June 30, 1879, it was shown that the revenue was £38,128 7s., the chief items of which were—Consumers by meter, £26,426 0s. 2d.; consumers by contract, £1023 2s. 8d.; residual products, £6045 17s. 8d.; harbour and town lamps, £4430 16s. 4d. The ordinary expenditure amounted to £32,865 10s., and the extraordinary expenditure to £1194 14s. 3d.—total, £34,060 4s. 3d., and showing a profit of £4068 2s. 9d., which it was proposed should be appropriated thus—To the Police Board, £4000; to the contingent-fund, £68 2s. 9d. The capital account of the gas-works was stated to be £145,870 8s. 8d. A statement of the probable revenue and expenditure for the current year was also submitted, and the Gas Committee recommended that the price of gas be reduced from 4s. 7d. to 4s. 2d. per 1000 feet, as from the meter inspection made last May. After the Provost had made a statement in support of the minutes, a long discussion took place, and eventually the minutes were adopted, and the recommendation agreed to.

The ordinary monthly meeting of the Greenock Water Trustees was held last Tuesday—Provost Lyle in the chair. A report by the Engineer on the progress of the Loch Thom works was submitted, and the Provost stated that the total outlay for material and men's wages in connection with these works up to the 7th inst. was £3876 18s. 8d. An estimate of the income and expenditure for the current year was submitted, which showed that the revenue expected to be derived (which included £230 17s. 1d. of a surplus from last year) was £22,930 17s. 1d. The expenditure, including £320 17s. 1d. for incidental expenses, is estimated at the same sum. As the sum of £22,700 was required to be raised for the current year, the Provost moved that the rate for water for domestic purposes be 8d. in the pound; public water-rate, 1½d. per pound; rate for the extended boundary for domestic purposes, 1s. per pound, with 10 per cent. added for water used for other domestic purposes. The motion was agreed to. The Superintendent reported that the total quantity of water in store at the various reservoirs was 405,395,949 cubic feet, or 115 days supply for all purposes.

At a meeting of the Forfar Police Commissioners held last Monday, a letter was read from the Parliamentary Solicitor with reference to the refusal of the Public Works Loan Commissioners to lend money for the town's water-works in progress. The Committee recommended that the Clerk be instructed to apply to insurance companies and others for the necessary loans. Mr. Whyte remarked that he did not think the Committee would be seriously put about by the refusal of the Loan Commissioners, and hoped by another meeting to be able to submit satisfactory information on the subject. The recommendations were approved of, and Mr. Whyte then said that he was in a position to state that the whole cost of the scheme, including the laying of pipes within the burgh and taking in the Whiteburn, would be under £42,000, whereas the original estimate, which did not include the Whiteburn, was £50,000. The assessment would not exceed 1s. 6d. per £1.

The annual visitation of the Corporation Water-Works by the Town Council of Aberdeen took place last Wednesday. Various important improvements on the filtering-ponds were in progress. These works have now been 13 years under the charge of the Town Council, and during that time the consumption of water has increased from 1¼ million gallons per day to 4½ million gallons; and it is a curious circumstance that on last New Year's Day the amount of water supplied to the city reached the enormous quantity of 5 million gallons, being the largest consumption on one day in the history of the works. In connection with this it is a highly satisfactory circumstance that while the water-rate in 1866, when the works were taken over by the town, was 1s. 4d. per £1, it is now reduced to 8d. per £1.

The Glasgow pig iron warrant market was very strong at the beginning of last week; a sharp reaction, however, took place, which was almost quite recovered by the end of the week. As low as 42s. 6d. cash was taken on Thursday, but on the following day, up to 43s. 3d. prompt cash was paid, and 43s. 4½d. cash in 17 days. On account of the speculative element now prevailing in the market, sharp fluctuations are looked for.

A considerable number of the coalmasters have granted an advance of wages to their workmen, but it does not seem as if there were any increased demand for coal.

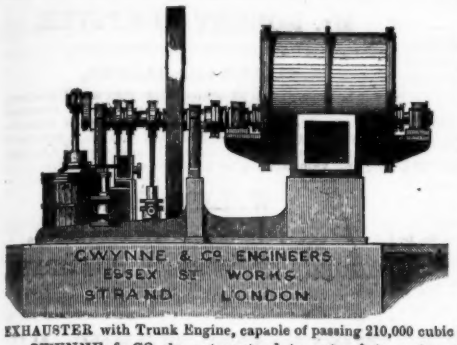
KIDSGROVE GAS COMPANY.—The annual meeting of this Company was held on Thursday, the 14th inst.—Mr. John Gater presiding. The Secretary (Mr. T. Wardle) read the Directors report, which stated that the mains had in many cases been replaced, that the plant was in good working order, and that there had been during the year a slight increase in the consumption of gas in the new districts, while in Kidsgrove proper there had been a falling off. The Directors had been able during the year to make a reduction in the price of gas, and doubted not but in future, when it could be done, there would be a further reduction. The net profits for the year were £1150 19s. 5d., out of which they recommended the payment of £1149 19s. 2d. for dividends, which left a balance of £1 0s. 3d. The report was unanimously adopted, and a dividend of 10 per cent. on the old shares, and 7 per cent. on the new shares, declared.

NORMANTON GAS COMPANY.—The half-yearly meeting of this Company was held on Saturday, the 9th inst. Mr. W. Statter, who presided, explained, in reference to the accounts, that there had been expended during the six months only £63 4s. 8d. for additional meters and mains. This made the total expenditure £20,003 17s. 10d., so that the whole of the capital was just exhausted. The quantity of gas made during the half year was 8,500,000 feet, and 6,318,000 feet had been sold. The leakage was exceedingly heavy, being 24 per cent. That arose mainly from the pipes being interfered with through the settling of the ground consequent on mining operations, also by the drainage letting down the pipes. Then they had had some serious escapes through the frosts; mains had been broken, and the joints drawn. It was the most serious leakage they had ever had, but it would not happen again, because they did not expect so severe a winter every year. There was a balance in hand of £1300, out of which the Directors recommended the payment of a dividend at the rate of 7½ per cent., which would amount to £750. The chief items of expenditure had been £656 0s. 11d. for manufacture, £98 15s. for rates and taxes, and £80 14s. for management; these, with others, brought the total up to £905 12s. 9d. On the income side of the account there stood £464 9s. for the sale of gas to private consumers, £724 9s. 10d. for public lighting, £136 3s. 8d. for coke, £122 3s. 8d. for tar, £144 9s. 3d. for liquor. Other smaller sums brought the amount to £1639 6s. 11d., or £63 more than last year. So that, notwithstanding bad times, they had not retrograded. It would thus be seen that the profits had been £733 14s. 2d. It needed £750 to pay the dividend, and therefore they would have to take a small sum from the reserve to make it up. The accounts were adopted, and the dividend declared.

ILKESTON LOCAL BOARD GAS SUPPLY.—On Tuesday, the 12th inst., an inquiry was held at Ilkeston, in consequence of the application of the Local Board to the Local Government Board for their sanction to a loan of £4400 for works of gas supply. Mr. Wright Lissett, Clerk to the Local Board, stated that some time ago the Board purchased the Ilkeston Gas-Works for £25,600, and they now proposed to enlarge and improve the works, at a cost of about £4400. A plan of the proposed extensions and alterations was produced, and it was stated that the Board proposed to erect a new retort-house to contain four beds of 7 retorts each; to convert the present retort-house into a purifying-house to contain two sets of purifiers; to convert the present purifying-house into an engine-house; to provide a new gas-engine; and to make other minor alterations. The leakage of gas last year was about 33 per cent. of the quantity made, so that it was proposed to overhaul the main-pipes, and enlarge and extend them. The Stanton Iron Company had applied for gas to be supplied to their works, and it would necessitate the laying of a considerable length of new main. It was estimated that the structural works contemplated would cost £3000, and the overhauling of the mains and laying new ones about £1400, making a total of £4400. The gas-works were calculated to manufacture about 100,000 cubic feet of gas per day; but the existing gas-holders would only store about 72,000 feet. The Stanton Iron Company, it was computed, would require provision to be made for supplying about 24,000 feet of gas per day. The Board, in accordance with the advice of their Engineer (Mr. G. W. Stevenson), proposed at some future time to erect a gasholder capable of containing 200,000 feet of gas, and the contemplated alterations were with a view to such an erection. The Inspector (Mr. S. J. Smith) was of opinion that the better and more economical plan would be to erect a new and larger holder at once, so as to complete the improvements, and provide against the waste of gas which would take place by allowing it to remain in the mains when not required for use. Mr. Lissett said that no estimate of the cost of erecting a larger holder had been made, but such an estimate could be obtained. Some discussion ensued, in which Mr. Wade (the Chairman of the Local Board) stated he was of opinion that the better plan would be to alter the application for a loan so as to include the cost of erecting the proposed holder for 200,000 feet of gas, and he thought the Local Board would agree to it. After some further discussion, it was decided that Mr. Lissett should write to Mr. Stevenson and obtain an estimate of the cost of erecting the proposed holder; that the question be laid before the Local Board at a special meeting to be called as soon as convenient, the result to be forwarded to the Inspector in London, who intimated that if the Local Board agreed to apply for a loan to enable them to complete the whole of the proposed alterations, he should recommend the Local Government Board to sanction it. The rateable value of the district is £31,460 14s., and the debt about £50,000.

The GRAND MEDAL of MERIT at the VIENNA EXHIBITION, TWO MEDALS at the PHILADELPHIA EXHIBITION and TWO MEDALS at the PARIS EXHIBITION, have been AWARDED to GWYNNE & CO. for GAS-EXHAUSTERS, ENGINES, and PUMPS; Also 27 OTHER MEDALS AWARDED at all the GREAT INTERNATIONAL EXHIBITIONS.

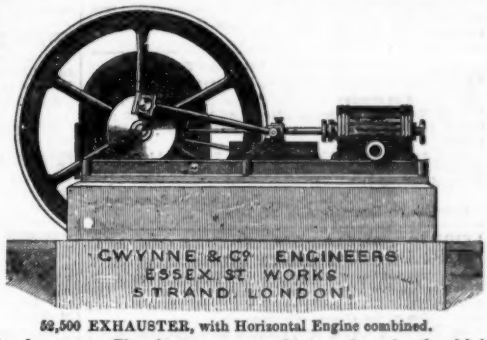
GWYNNE & BEALE'S PATENT GAS-EXHAUSTERS & ENGINES.



EXHAUSTER with Trunk Engine, capable of passing 210,000 cubic feet per hour.

The Judges report on the combined Exhauster and Steam-Engine exhibited at the Philadelphia Exhibition is—"*Reliable compact Machine, well adapted for the purpose intended, of excellent workmanship.*"

GWYNNE & CO. have made the largest and most perfect Gas-Exhausting Machinery in the world, and have completed Exhausters to the extent of 8,000,000 cubic feet passed per hour, of all sizes from 2000 to 210,000 cubic feet per hour.



52,500 EXHAUSTER, with Horizontal Engine combined.

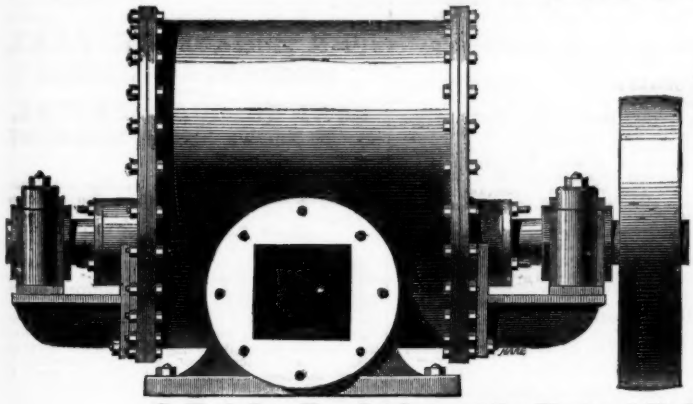
GWYNNE & CO. do not pretend to enter into a struggle with other makers in respect to cheapness. They have never sought to make price the chief consideration, *but to produce machinery of the very highest quality, and most approved design and workmanship.* The result is that in every instance their work is giving the fullest satisfaction. Numerous testimonials and references can be given to Companies using their Machinery for years past.

Exhausters, with or without Engines combined, can be made to pass the gas WITHOUT OSCILLATION OR VARIATION IN PRESSURE Regulators, Bye-Passes, Stop-Valves, Gas-Valves, Station Governors, and Gas Machinery of all Sizes.

PLEASE ADDRESS IN FULL, **GWYNNE & CO.**, Hydraulic and Gas Engineers,
ESSEX STREET WORKS, VICTORIA EMBANKMENT, LONDON, W.C., ENGLAND.

Gwynne & Co.'s New Catalogue on Gas-Exhausting and other Machinery may be obtained on application at the above Address.

BEALE'S IMPROVED PATENT GAS EXHAUSTERS,



WITH OR WITHOUT
WROUGHT-IRON SPINDLES AND
ENGINES COMBINED.

GEORGE WALLER & CO.,
MAKERS OF
ENGINES, EXHAUSTERS,
INDEX AND DISC GAS-VALVES,
HYDRAULIC MAIN VALVES,
BYE-PASS VALVES,
TAR, LIQUOR, AND OTHER PUMPS,
SCRUBBERS AND PURIFIERS,
CONDENSERS, BOILERS, &c.

G. W. & Co.'s New Catalogue of Gas Plant and Machinery can be had on application.

PHŒNIX ENGINEERING WORKS:
HOLLAND STREET, SOUTHWARK, S.E.

WANTED, Readers of the NEW Edition, 1879, "Cooking & Heating by Gas;" on Burners, &c. Copies, by post, Threepence, direct from the Author, MAGNUS OHREN, A.I.C.E., Gas-Works, SYDENHAM, S.E.

WANTED, a steady, efficient Tar Still-MAN, with good character. Must be well up to working last runnings.
Apply, by letter, to No. 570, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, by a Stourbridge House, an AGENT for Sale of Gas Retorts and Fire-Bricks in London and the South. Preference to one acquainted with the trade, or already known by the Gaslight Companies.
Address No. 569, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, an experienced Working FOREMAN for Tar Works in the Provinces. Good wages, and house on the Works.
Address No. 576, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, by the Advertiser, a Situation as MANAGER or FOREMAN of Gas-Works. Has a thorough Practical Knowledge of Main and Service Laying, Internal Fitting, Meters, &c.
Address R. H. K., Globe Inn, Whitstable, KENT.

WANTED, by a Young Man, aged 23, a Situation in a Gas-Works. Five years experience in a works making 80 millions. Can use Photometer, fair Draughtsman, good writer, quick at figures, and thoroughly understands general routine.
Address Z., 115, Westfield Street, St. Helen's, LANCS.

MANAGER of Tar or Tar and Ammonia Distillery requires an Engagement. Has Practical Knowledge of all Crude and Refining Processes, &c.
Address K. G., May's Advertising Offices, 159, Piccadilly, LONDON, W.

WANTED immediately, a Working MANAGER for a Gas-Works in Gloucestershire. Must be a steady and reliable man, and have a thorough Practical Knowledge of the Manufacture of Gas and Meters, and Taking the Index of same, also be a good Main Layer, &c. House, gas, and coal.
Address, with copies only of testimonials, to No. 575, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

A Gentleman (Assoc. Inst. C.E.), 29 years of age, wishes to obtain a Re-engagement as Engineer-in-Chief to a Gas Company abroad. Has had nine years experience in Gas matters, and received his professional education in two of the largest Gas-Works in Europe, and was employed for three years as Chief Engineer to a Gas Company abroad.
Address W. R. J., care of T. H. Devonshire, Esq., Solicitor, 1, Frederick's Place, Old Jewry, LONDON, E.C.

DRY GAS-METERS.

WE have a large extra Stock of these, in three, five, and ten lights, of the best make, that we can offer at less than half the list price. Have been tested by the City Gas Inspector. Also a few 100 to 300 lights, equally low in price.
HODGE AND CO., Gas Engineers, 100 and 101, Hatton Garden, LONDON, E.C.

FOR SALE—A Wrought-Iron Scrubber, 10 ft. by 3 ft., with 5-in. Connections, equal to new; Three 5-in. Hydraulic Valves, and Two Washers.
The above are for Sale in consequence of alterations, and, as the room is wanted, no reasonable offer will be refused for the whole or for a portion.
Apply to Mr. ARTHUR L. LEIGH, Gas-Works, Witney, OXON.

TO BE SOLD, Cheap, Three Telescopic GASHOLDERS, two 60 ft. diameter and 20 ft. deep each lift, and one 70 ft. in diameter and 20 ft. deep. Only been in use eight years. May now be seen at work at the Effingham Street Gas-Works, Sheffield.
For price, apply to THOMAS PIGGOTT AND CO., Spring Hill, BIRMINGHAM.

EXHAUSTER; Beale's 30,000 per hour. Makers, Burton and Waller. Fit for immediate use. For sale cheap.
For price and particulars apply to the MANAGER, Brentford Gas-Works, SOUTHALL.

TO PLUMBERS, GAS-FITTERS, AND BRASS-FINISHERS,

FOR immediate Disposal, in Exeter, a Good BUSINESS, established 34 years. Capital Workshops and Premises, adequate for a large concern. Owner retiring. Coming in about £200.
Apply to Mr. JOHN DAMEREL, Ironmongers Valuer, EXETER.

GAS PLANT FOR SALE.

A 10-in. Vertical Pipe Condenser, having 20 Pipes, each 19 ft. high, on Cast-Iron Base Box.
A Scrubber, 16 ft. high 5½ ft. diameter, fitted with thin boards, Self-Acting Liquor Distributor, 10-in. inlet and outlet pipes.
Two Single-Flue Cornish Boilers (new in 1870), each 9½ ft. long, 3 ft. 9 in. diameter; Fire Tube of Low Moor Iron, complete with all Fittings.
All in good working order; removed to make room for larger plant.
For further particulars apply to THOS. TREWHITT, Gas-Works, WEST HARTLEPOOL.
May 8, 1879.

BOROUGH OF HALIFAX.

THE Gas-Works Committee of the Hali-fax Corporation hereby invite TENDERS for the Supply of COAL for a period of One, Two, or Three years. The Coal must be the best of its kind, and entirely free from shale, dirt, and pyrites, and will be required to be delivered in regular monthly quantities, at the Corporation railway siding at their Works.
Further particulars and forms of tender may be obtained from Mr. Carr, Manager of the Gas-Works.
Tenders, properly endorsed, to be delivered to me on or before Sept. 18, 1879.
By order,
A. C. FOSTER, Town Clerk.
Town Hall, Halifax, Aug. 25, 1879.

MR. E. TIMMINS, Engineer and Contractor, Bridgewater Foundry, Runcorn, having Purchased the whole contents of the Whitestone Iron-Works, Huddersfield, till recently carried on by Mr. W. C. Holmes, has a large quantity of Gas-Works Plant, new and ready for delivery; consisting of Gasholders from 12 to 40 feet diameter, Purifiers with New Wood Grids, Centre-Valves, Syphons of all sizes, and Wrought Buckled, Retort Lids.

Parties about to extend their Gas-Works or erect same, may view, and purchase at low prices, as the whole is being cleared out for railway extensions.

RUNCORN GAS COMPANY.

THE Directors of this Company are prepared to receive TENDERS for the Surplus TAR, also for the whole of the AMMONIACAL LIQUOR produced at their Works for a term of One, Two, or Three years.

Tenders endorsed "Tar or Liquor," and addressed to the undersigned, to be delivered on or before the 3rd of September.

J. R. FRITH, Engineer and Secretary.
Gas-Works, Runcorn, Aug. 20, 1879.

LEIGHTON BUZZARD GAS AND COKE COMPANY.

THE Directors desire the services of a person who is competent to act as COLLECTOR, Meter Inspector, Fitter, and Repairer of Meters, and generally to make himself useful, under the direction and supervision of the Company's Manager.

Applications, stating age, married or single, and salary required, in candidate's own handwriting, with testimonials as to capability and character, to be addressed and forwarded to H. Heard, the Secretary to the Company, at Leighton Buzzard, on or before the 15th of September next.

The person appointed will be required to give security for fidelity to the amount of £200.

HIRAM HEARD, Secretary.
Leighton Buzzard, Aug. 25, 1879.

BICESTER GAS-WORKS.

THE Bicester Gas, Coke, and Coal Company are prepared to LET their Works for the term of Seven years from the 1st day of October, and hereby invite tenders for the taking of the same.

Applicants are requested to apply to me at my Office, in Bicester, Oxon., for the terms of Letting, and sealed tenders, subject to such terms, are to be delivered to me on or before Sept. 12, 1879.

The Directors do not pledge themselves to accept the highest or any tender. By order,

PERCIVAL WALSH, Secretary.
Bicester, Oxon., Aug. 18, 1879.

TENDERS FOR TAR.

THE Directors of the Exeter Gaslight and Coke Company invite TENDERS for their Surplus TAR for One year from the 1st day of October next.

Probable quantity from 130,000 to 150,000 gallons.

Delivery on Company's Works, filled into purchaser's tanks.

Payments, cash monthly.

Sealed tenders, endorsed "Tender for Tar," will be received by the undersigned on or before Monday, the 15th day of September next, but the Directors do not bind themselves to accept the highest or any tender.

W. A. PADFIELD, Secretary.
Gas Offices, North Street, Exeter, Aug. 19, 1879.

THE VENTNOR GAS AND WATER COMPANY.
Incorporated by "The Ventnor Gas and Water Act, 1866."

ADDITIONAL CAPITAL.

NOTICE is hereby given that under the powers conferred by "The Ventnor Gas and Water Order, 1879," the Directors are prepared to receive TENDERS for the Purchase of 150 shares of £20 each, in the following lots, viz.:—

10	lots of	1 Share each.
10	,,	2 Shares each
15	,,	3 ,,
15	,,	5 ,,

The Shares tendered for will be entitled to a dividend *pro ratio* with the original capital of the Company, such dividend not to exceed 7 per cent. per annum.

Forms of tender may be obtained upon application, and must be sent in not later than Tuesday, Sept. 23, 1879, at Three o'clock in the afternoon.

FLETCHER W. STEVENSON, Secretary.
Ventnor, Aug. 19, 1879.

THE Gloucester Gas Company, ceasing to manufacture gas at their old works, will have the undermentioned APPARATUS for Sale about the beginning of August, viz.:—

110 Mouthpieces, D-shape, 13 in. by 22 in., with Wrought-Iron Lids, Cross-Bars, Stand, Bridge, and Dip Pipes. Also about 150 feet of D-shape Wrought-Iron Hydraulic Main, size 19 in. by 19 in. 28 Mouthpieces, D-shape, 16 in. by 20 in., with Wrought-Iron Lids, Cross-Bars, Stand, Bridge, and Dip Pipes. Also about 38 ft. of D-shaped Wrought-Iron Hydraulic Main, size 20 in. by 20 in. Annular Condenser, consisting of six Vertical Pipes, 24 in. diameter, 19 ft. high, with three 12 in. Slide-Valves and 12 in. Connections.

Scrubber (round), 5 ft. by 20 ft., with three 12-in. Slide-Valves, and 12 in. Connections.

Exhauster (Jones) to pass about 15,000 feet per hour.

Exhauster (Beales) to pass about 25,000 feet per hour.

Two Vertical Steam-Engines, each about 6-horse power, with Pulleys, and Shafting used for driving the above.

Boiler 14 ft. 6 in. by 3 ft. 6 in., with Centre Tube, and four Galloway Patent Tubes.

4-horse power Horizontal Steam-Engine.

Three 4-in. Pumps, with cranked Shafting and a pair Mitre Wheels.

Set of four Purifiers, 12 ft. by 12 ft. by 4 ft., with 12-in. Centre-Valve (Cockeys), and Connections and Lift complete.

Station-Meter by A. Wright and Co., London, with three 12-in. Slide-Valves, and 12-in. Bye-Pass and Connections, to pass about 25,000 feet per hour.

Gasholder, Double Lift, with Cast-Iron Tank, capacity 37,000 feet.

Gasholder, Double Lift, capacity 100,000 feet.

Gasholder, Double Lift, capacity 240,000 feet.

Two 12-in. Governors, by Wright, London, with 12-in. Valves, Bye-Pass, and Connections.

Two 12-in. four-way faced Valves, by Cockey.

For further information, &c., apply to the undersigned.

R. MORLAND, Engineer.

WANTED, by Samuel Thompson & Co., Colliery Office, Lancaster, APPLICATION for PRICES from Gas Managers who are prepared to receive Tenders for GAS COAL or CANNEL.

John Leigh, Esq., M.R.C.S., F.C.S., &c., &c., in his analytical report of S. T. & Co.'s Coal, says: "It is remarkable for its purity, I have scarcely ever examined a Coal containing so small a quantity of ash, and when Cannel of the best description is scarce, it may well replace this material."

THE Holywood Gas Company, Limited, are open to Purchase a Second-Hand EXHAUSTER and SCRUBBER, suitable to pass about 5000 feet per hour. Must be of approved make and in good condition.

Apply, with particulars, to

THOS. HUNTER, Secretary.
Holywood, Co. Down, Aug. 15, 1879.

THE Middlesbrough Gas Committee are prepared to receive TENDERS for the Supply of about 15,000 Tons of Best Screened GAS COAL, to be delivered at the Gas-Works Siding, Middlesbrough, in such quantities and at such times as may be directed from November, 1879, to November, 1880. Payments to be made monthly, immediately after Council meeting.

Tenders, specifying the description of the Coals with analyses of the same, together with the names of the pits at which they are raised, are to be sent to me on or before the 3rd of September, at my Offices, Corporation Hall, Middlesbrough.

The Gas Committee do not bind themselves to accept the lowest or any tender.

GEO. BAINBRIDGE, Town Clerk.

CORPORATION OF NOTTINGHAM—GAS DEPARTMENT.

THE Gas Committee of the Corporation of Nottingham are prepared to receive TENDERS from competent and experienced Contractors for the Construction of a New GASHOLDER-TANK, 163 ft. internal diameter, at the Radford Station of the Nottingham Gas-Works.

Plans and specifications may be seen at my Offices, where also forms of tender may be obtained, on which form alone tenders will be received.

Sealed and endorsed tenders to be sent to the Town Clerk on or before Tuesday, the 9th of September next.

By order,
M. OGLE TARBOTTON, Engineer.
Gas Offices, George Street, Nottingham, Aug. 1879.

CORPORATION OF NOTTINGHAM—GAS DEPARTMENT.

EXHIBITION OF GAS-ENGINES, COOKING-STOVES, BURNERS, AND OTHER APPARATUS.

THE Gas Committee of the Corporation of Nottingham intend holding, from the 24th to the 29th of November next, an EXHIBITION of all kinds of Apparatus or Appliances showing the Advantages and Economical Uses of Gas for Engines, Cooking, Domestic, and other purposes. They will provide space, gas, and connections free, and give Prizes, consisting of Medals and Certificates of Merit.

Intending Exhibitors will be furnished with printed conditions, forms for allotment of space, and any further information, on application to the undersigned,

JOHN WILSON,
General Manager and Secretary to the Exhibition Committee.
Gas Offices, George Street, Aug. 18, 1879.

BOROUGH OF NEATH, GLAMORGANSHIRE.

TAR AND SULPHATE OF AMMONIA.

THE Gas Committee of the Neath Corporation are prepared to receive and consider TENDERS for the Purchase of the Surplus TAR and SULPHATE of AMMONIA produced and manufactured at their Gas-Works during Twelve months from Oct. 1, 1879.

Further particulars may be obtained on application to the Manager, Gas-Works, Neath.

The Gas Committee do not bind themselves to accept the highest or any tender.

Sealed tenders, endorsed "Tender for Tar, &c.," to be sent to me on or before Monday, Sept. 8, 1879.

By order,
ALFRED CURTIS, Town Clerk.
Town Clerk's Office, Neath, Aug. 19, 1879.

Now ready, price 6d. and 1s.

THE

SOFTENING AND PURIFICATION OF WATER

ON AN IMPROVED SYSTEM.

PART I. explains the application of the system to large or small supplies for Private Mansions, Schools, Colleges, Asylums, Hospitals, Public Institutions, &c. Price 6d.

PART II. treats of the application of the system to large supplies for Water-Works and for Manufacturing Purposes, Paper Mills, Breweries, Bleach Works, the Prevention of Incrustation in Steam Boilers, stationary or locomotive, &c. It also contains extracts from Tables of Analyses, and Notes on Water Supply, specially useful for reference in connection with the question of Water Softening and Purification. Price 1s.

F. H. ATKINS & CO., ENGINEERS,
62, FLEET STREET, LONDON, E.C.

HENRY LYON (14 years Engineer and Manager of the largest of the Manchester Corporation Gas-Works) Mechanical and Consulting Gas Engineer, reports upon the condition and value of Gas-Works, supplies plans and specifications of all Apparatus appertaining to Gas-Works, and re-models existing Works.

Address Brooklyn, near Halliwell Lane, Cheetham Hill Road, MANCHESTER.

Mr. ROBERT DEMPSTER,
CONSULTING GAS ENGINEER,
ELLAND, near HALIFAX,

May be consulted on all matters connected with Valuations, Arbitrations, and Parliamentary Applications connected with Gas-Works. Having been engaged on extensive Arbitration Cases, which, combined with his experience in Construction and Contracting, his knowledge of Engineering and Valuations is both extensive and reliable.

W. LIDDALL,
Public Accountant,
MOORGATE STREET CHAMBERS,
GREAT SWAN ALLEY,
MOORGATE STREET, E.C.

ALFRED LASS, F.I.Accts.,
SPECIAL ACCOUNTANT FOR GAS AND WATER UNDERTAKINGS,
30, GRACECHURCH STREET, LONDON.

Accounts Analyzed and Statistics Prepared for Parliamentary Proceedings, Arbitrations, &c.

The Forms of Account, which have been specially designed by Mr. Lass to meet the requirements of the Gas-Works Clauses Amendment Act, 1871, are now in use by many Gas Companies, Corporations, and Local Boards.

JOHN ROMANS, C.E., F.G.S.E.,
CONSULTING GAS ENGINEER
AND
CANNEL COAL FACTOR,
30, St. Andrew Square, EDINBURGH.

Plans and Estimates furnished; Gas-Works, Apparatus, Pipes, Machinery, Fire Goods, &c., supplied, or Attested and Shipped for Exportation.

GAS-WORKS TAKEN ON LEASE.

Mr. ROMANS has for upwards of 30 years been practically engaged in the Manufacture of Gas, and has, by extensive experiments, ascertained that by JUDICIOUS INTERMIXTURE of the lighter with the heavier gases, much of the rich Hydrocarbons CAN BE SAVED, which otherwise ARE LOST, during the process of manufacture. He is therefore enabled to give advice to those who favour him with their orders for Cannel, as to the class which will secure for their standard of illuminating power the HIGHEST ADVANTAGEOUS RESULTS.

ANALYSIS AND PRICES FORWARDED ON APPLICATION.

THE

IMPERIAL METER CO.,

LIMITED,
(Formerly Walter Ford, at Gray's Inn Road),
KING'S ROAD, ST. PANCRAS.

Manufacturers of THE IMPROVED DRY GAS-METER, THE PATENT WET GAS-METER. Special Meters for Public Lighting, STATION-METERS, Governors, &c.

TO MAKERS OF SULPHATE OF AMMONIA AND BUYERS OR SELLERS OF GAS LIQUOR.

F. SUTTON & CO., Norwich, are now prepared to Supply a Set of Apparatus with Standard Test Solutions for the rapid and accurate analysis of Gas Liquor, which can be used by any intelligent workman, so as to show the actual amount of Sulphate which can be got out of any sample of liquor in a few minutes, without any of the annoyance arising from saturation with acid, &c. Tables are also given, showing the quantity of acid of various strengths required for any given liquor, the accurate ounce-strength and percentage of pure ammonia, &c. Price of the set, with full direction and table (copyright), with materials sufficient for fifty analyses, £1 4s.

Post orders or cheques to be made payable to F. SUTTON AND CO., Manufacturing Chemists, NORWICH, who also supply every description of Standard Solutions for Volumetric Analysis of Waters, Beers, Manures, &c., of guaranteed accuracy.

Now ready, Second Edition, price 7s., by post 7s. 3d., the

GAS MANAGER'S HANDBOOK.

By THOMAS NEWBIGGING, M.I.C.E.

Orders to be sent to

WALTER KING,
11, BOLT COURT, FLEET STREET, LONDON, E.C.

M. DAVIS & CO., 27, Wellclose Square, LONDON, E.,

COMMERCIAL GLASS WORKS.

BEST OPAL SHEET GLASS, IN CASES OF 200 FEET.

150 Y	7d. per foot.	26 Y	11d. per foot.
21 Y	9d. ,,	32 Y	1s. 3d. ,,

Enamelled Sheet Glass, Flint and Opal, 1s. 2d. Coloured Glass and Opal, 1s. 6d. to 2s. 6d. per foot.

GAS GLASSES OF ALL DESCRIPTIONS ON HAND; SPECIAL PRICES FOR QUANTITIES.

J. & H. ROBUS,

BUILDERS AND CONTRACTORS

FOR THE ERECTION AND REBUILDING OF GAS AND WATER WORKS,

RETORT-SETTING—A SPÉCIALITÉ.

ROBUS'S IMPROVED RETORT-SETTINGS, guaranteed to Carbonize a large amount of Coal with a small per cent. of Fuel.

ESTIMATES GIVEN FOR MAIN-LAYING.

N.B.—All kinds of Fire Goods and Gas Apparatus supplied on the shortest notice.

Address:—J. & H. ROBUS, BELL GREEN, CATFORD, LONDON, S.E.

GAS *v.* ELECTRIC LIGHT.

WIGHAM'S PATENT GAS-BURNERS

FOR

STREET LIGHTING, &c., WHICH REQUIRE NO GLASS CHIMNEY.

Speaking of these burners, erected on the Thames Embankment by Westminster Bridge, the *Daily News* says:

". . . . A blaze of light is thrown out, which, in point of efficiency and brilliancy, far surpasses the large gas-lamps lately erected in Waterloo Place, *while even the electric lights are quite thrown into the shade.*"

SOLE MANUFACTURERS:

J. EDMUNDSON & CO., GAS ENGINEERS,

19, GREAT GEORGE STREET, WESTMINSTER, LONDON, S.W.

E. & W. H. HALEY,

IRONFOUNDERS & MAKERS OF

CAST-IRON PIPES

FOR

GAS, WATER, & STEAM.

LISTER HILLS FOUNDRY,

BRADFORD, YORKSHIRE.

W. C. HOLMES & Co.,

ENGINEERS AND CONTRACTORS

FOR

GAS AND WATER-WORKS,

HUDDERSFIELD.

REFERENCES TO UPWARDS OF 400 WORKS.

TO ENGINEERS & MANAGERS.

CLIFTON'S PATENT BARROW

Is acknowledged to be the best in the market; made out of Sheet or Flat Bar Iron.

For particulars apply to the Sole Makers,

THORNELOE & COMPANY,

ENGINEERS AND CONTRACTORS,

57, BARBICAN, LONDON, E.C.

ECONOMY IN THE PRODUCTION OF GAS, AND CARBON DEPOSIT ENTIRELY PREVENTED.

PLUTONIC CEMENT,

FOR JOINTING AND REPAIRING RETORTS AND OVENS *in* ACTION AND *out* OF ACTION.

A Pamphlet on the advantages of the above, with Modes of Application, References, Prices, &c., free by post, from the Sole Manufacturer,

WILLIAM RICHARDSON, Gas and Hydraulic Engineer, CHARLES HENRY STREET, and BISSELL STREET, BIRMINGHAM.

LIVESEY'S PATENT WASHER.

This apparatus effects the most intimate contact between the liquor with which it is supplied and the gas passing through it, resulting in the complete removal of all particles of tar, increasing the ammonia strength of the scrubber and condenser liquor, and removing a large proportion of other impurities—notably, carbonic acid. The Washer is intended to work in conjunction with a scrubber. It occupies little space, and is inexpensive. It has been in successful constant use for nearly three years, does not become clogged with tar or corroded by the action of the liquor or gases, it gives three inches of pressure, and only needs a supply of liquor to keep it in regular action without any further attention.

For Particulars and Prices apply to

Messrs. DEMPSTER AND SONS, ELLAND, HALIFAX, for the North;

Messrs. BAILEY, PEGG, AND CO., Bankside, LONDON, S.E., for the South;

Messrs. WILLEY AND CO., Commercial Road, EXETER, for West of England and South Wales

Or to the PATENTEE, 589, OLD KENT ROAD, LONDON, S.E.

PARIS EXHIBITION,

1878.

THREE MEDALS

AND

HONOURABLE MENTION

HAVE BEEN AWARDED TO

JOSEPH CLIFF & SONS

For their Various Exhibits, amongst which is a

SILVER MEDAL

FOR THEIR

PATENT MACHINE-MADE

RETORTS AND FIRE-BRICKS,

Being the Highest Honour given for this class.

Established

1795.

JOSEPH CLIFF & SONS,

THE ORIGINAL

WORTLEY FIRE-BRICK WORKS,

NEAR LEEDS,

London Wharf: No. 4 inside Great Northern Goods Station, King's Cross, N. Liverpool: Leeds Street.

SPECIAL NOTICE.—Our Patent Machine-Made Retorts have now been thoroughly tested, and have proved themselves infinitely superior to those made by hand. At several large works it has been settled, beyond question, that, owing to the compactness and general excellence, more gas is sent to the gasholder from each ton of coal carbonized than is the case with hand-made Retorts.

WILLIAM SUGG'S
IMPROVED SYSTEM OF STREET LIGHTING.

"Sugg's 200-candle burner, with 42·09 feet of 20·85 candle gas, gave an illuminating power of 231·56 candles."—*Report of Mr. A. C. M'Minn, Engineer to The Gaslight and Coke Company, Kensal Green Station.*

"The light exhibited last night (Sugg's 200-candle burner and lantern) was equal to 360 candles — more than double that given by the old lamps, while the consumption of gas was exactly the same—40 feet per hour."—*Glasgow Herald*, April 25, 1879.

NEW (REGISTERED) GLOBE PATTERN LANTERN, For London Argand Burners of 30, 50, 100, 200, and 400 Candle Power.

This lantern is glazed with opal reflecting panes and clear glass, as shown, thus securing an entire absence of shadow, and is fitted with the new self-ventilating top (registered) ensuring perfect steadiness of flame, even in the heaviest gale of wind.

Results obtained in Illuminating Power from WILLIAM SUGG'S 200-candle Burners with Cannel and Common Gas:—

Variety of Gas.	Cubic Feet of Gas burnt per Hour.	Illuminating Power in Sperm Candles burning 120 Grains per Hour.	Number of Candles to which every Cubic Foot of Gas burnt is equivalent.
Common 16-candle	53·4	228	4·23
Cannel 19-candle	47·3	252	4·76

Joint experiment by—
CHARLES HEISCH, Superintending Gas Examiner to the Corporation of London.
T. N. KIRKHAM, M.I.C.E., F.C.S.
C. MEYMOTT TIDY, M.A., M.B., Professor of Chemistry and of Forensic Medicine at the London Hospital, Medical Officer of Health for Islington, and late Deputy Medical Officer of Health for the City of London.

Results obtained from WILLIAM SUGG'S large Argands for Street Lighting, by Mr. William King, Engineer to the Liverpool United Gas Company:—

ARGAND BURNER, WITH TWO CONCENTRIC FLAMES.
Consumption per hour 22·2 feet.
Illuminating power . 103·7 candles,
Or 4·67 candles per foot of gas.

ARGAND BURNER, WITH THREE CONCENTRIC FLAMES.
Consumption per hour 40·8 feet.
Illuminating power . 208·8 candles,
Or 5·12 candles per foot of gas.

22·7-candle Gas was used in the above Experiments.

NOTICE.—Notwithstanding a number of statements which have been repeated in the public journals, that burners by other makers have surpassed these results, the reports of comparative experiments from which the above extracts have been copied conclusively prove that **the "Sugg" Burners give over 30 per cent. of Illuminating Power more than can be obtained from any other burners with the like quantity of gas.**

PRICES AND PARTICULARS ON APPLICATION TO

WILLIAM SUGG,
GAS ENGINEER,
VINCENT WORKS, WESTMINSTER, S.W.

TRADE MARK.

"LEATHER" "VICTORIA" BELTING

"VICTORIA,"

The Cheapest and Best

LEATHER BELTING IN LONDON.

The Leather is of the Best Possible Quality, and English Oak Tanned.
Sample Orders of over £5, Carriage Paid to nearest Railway Station.

Is Manufactured expressly for

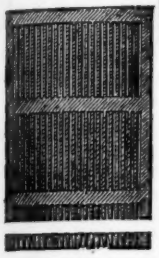
J. C. R. OKES,

39, QUEEN VICTORIA STREET, LONDON, E.C.,

And can only be obtained from him or his Agents.

PRICES ON APPLICATION.

R. DEMPSTER AND SON'S



WOOD SIEVES FOR PURIFIERS,

WITH TAPER OR PARALLEL BARS,

MADE BY SPECIAL MACHINERY.

SCRUBBERS FILLED WITH BOARDS,

On our approved principle, for the extraction of Ammonia.

Prices on application. References to First-Class Engineers.

ROSE MOUNT IRON-WORKS,

ELLAND, Near HALIFAX.

London Offices: 2, SUFFOLK LANE, CANNON STREET, E.C.

J. & J. BRADDOCK,

GLOBE METER-WORKS, OLDHAM,

MANUFACTURERS OF

WET & DRY CONSUMERS GAS-METERS,

OF THE HIGHEST EXCELLENCE ONLY;

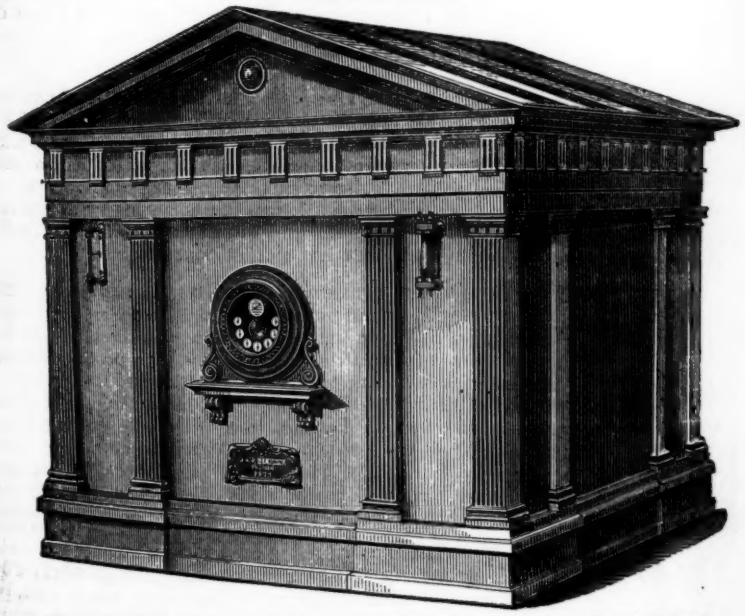
BRADDOCK'S PATENT COMPENSATING GAS-GOVERNORS;

ALSO LICENSEES AND MANUFACTURERS OF

WARNER & COWAN'S PATENT SELF-REGULATING GAS-METERS;

ROUND STATION-METERS,

ON CAST-IRON STANDS.



SQUARE STATION-METERS,

WITH PLANED JOINTS.

GOVERNORS, GAUGES, INDICATORS, MAIN COCKS, &c.

GAS COOKING APPARATUS.

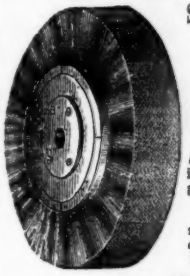
Home and Foreign Orders promptly attended to.

All Sizes of CONSUMERS METERS, STATION-METERS, and GOVERNORS generally in Stock.

Orders almost invariably despatched on the day of receipt.

TERMS, &c., ON APPLICATION.

Selig, Sonnenthal & Co.,



STEEL CASTING BRUSHES

FOR HAND.

Circular Casting Brushes for Lathes and Brooms,

Admirably adapted for Cleaning Hot Castings, &c., and for general use in foundries, gas-works, chemical works, &c.

As Supplied to the Government and the leading English and Foreign Engineers, Gas-Works, &c.

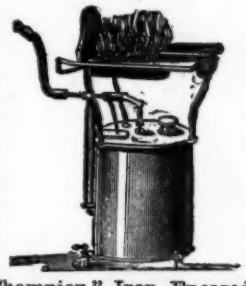
Broom

No. 1, Brush,	3in.	wire,	2	rows,	15s.	dozen.
,, 2, ,,	3	,,	round,		22s. 6d.	,,
,, 3, ,,	3	,,	4	rows,	22s. 6d.	,,
,, 4, ,,	2	,,	4	,,	21s.	,,
,, 5, ,,	3	,,	4	,,	22s. 6d.	,,
,, 6, Broom,	12in.	block,	7in.	wire,	4 rows,	72s. per dozen.
,, 7, ,,	16	,,	7	,,	4 ,,	90s. ,,
,, 8, ,,	upright,		7	,,	2 ,,	48s. ,,
,, 9, ,,	12in.	block,	7	,,	10 ,,	180s. ,,
,, 10, ,,	16	,,	7	,,	10 ,,	228s. ,,
,, 11, ,,	12	,,	4	,,	4 ,,	56s. ,,
,, 12, ,,	16	,,	4	,,	4 ,,	72s. ,,
,, 13, ,,	12	,,	4	,,	10 ,,	138s. ,,
,, 14, ,,	16	,,	4	,,	10 ,,	180s. ,,

Wheel,	4in.	dia.,	2¼	wide,	1½	wire projects,	⅜ hole,	each 10s.
,,	8	,,	2¼	,,	1½	,,	6 ,, ⅝ ,,	18s.
,,	10	,,	3	,,	2½	,,	6 ,, ⅝ ,,	21s.
,,	12	,,	3½	,,	3½	,,	7 ,, ⅝ ,,	28s. 6d
,,	14	,,	3½	,,	3½	,,	7 ,, 1	30s.
,,	18	,,	4	,,	3½	,,	8 ,, 1½	42s. 6d.

The "Champion" Iron Encased Forges.

Are specially suited for General Out-door Purposes, and will be found suitable to any climate.



No.	PRICES. SINGLE BLAST.	£ s.	DOUBLE BLAST.	£ s.
1,	8 in. bellows, to heat ¾ in. sq. in 2 min.	6 6	8 in. bellows, to heat ¾ in. sq. in 2 min.	8 8
2,	10 in. bellows, to heat 1¼ in. sq. in 2 min.	8 8	10 in. bellows, to heat 2 in. sq. in 2 min.	10 10
3,	12 in. bellows, to heat 2 in. sq. in 2 min.	10 10	12 in. bellows, to heat 3 in. sq. in 2 min.	13 13
			14 in. bellows, to heat 3½ in. sq. in 2 min.	21 0

The "Champion" Iron Encased Forge,

With Vice-Drilling Frame on stand complete.

No. 10, Double Blast, 10 in. bellows, to heat 3 in. sq. in 2 min., £15.

No. 11, Double Blast, 12 in. bellows, to heat 3 in. sq. in 2 min., £18.

No. 12, Double Blast, 14 in. bellows, to heat 3½ in. sq. in 2 min., £22 10s.

Sole Agents for the Lightning Screwing and Drilling Machines, Helical Pulley Blocks, Automatic Revolving Scrapers, Earth Borers, Tanite Co.'s Emery Wheels and Emery Grinders, Lathes, Genuine Morse Twist Drills, Cushman's Drill and Lathe Chucks, Patent Belt Screws, Patent Safety Belt Shippers, Casting Brushes, Shaped Diamonds, and a great variety of other Machinery always kept in stock or in progress.

LAMBETH HILL,

Queen Victoria St., London, E.C.

C. & W. WALKER,
8, FINSBURY CIRCUS,
LONDON, E.C.

MANN & WALKERS' PATENT SCRUBBER.

By Letters Patent in Great Britain, Europe, and the United States of America.

By some important improvements recently patented, the purifying power of these Scrubbers has been much increased, and a stronger ammoniacal solution obtained, which is found to absorb a large portion of the carbonic acid contained in gas, effecting an important saving in money and labour in the lime purifiers, and where oxide only is used, the increase in the illuminating power of the gas obtained by these Scrubbers is shown in a remarkable degree, in consequence of the large quantity of carbonic acid removed from the gas.

It is to be particularly noted that the im-portant results of these Scrubbers do not depend upon the machinery alone. The entire internal construction of the Scrubber bears an almost equally important part. For this reason, where it is desirable to convert existing Scrubbers, whose dimensions happen to be suitable, the work commences by ripping out the whole of the interior of the shell, and beginning the internal construction *de novo* from bottom to top.

Fifty million cubic feet of gas per 24 hours are purified from ammonia by these Patent Scrubbers in a winter's day in the gas-works of London, where the purity of gas supply is the highest in the world, under the chemical restrictions of the Board of Trade.

Generally, wherever a high standard of purification is maintained in the chief cities and towns of the British Provinces and of Europe, these Scrubbers have become established.

By their use the department of purification from ammonia upon a gas-works is made complete, without the aid of prepared oxide of iron, chemicals in purifiers, or any other supplementary process, and the whole ammoniacal residual product contained in the coal is absorbed and obtained in the form most profitable to a gas company, while the requirements of all Acts of Parliament and of the Board of Trade, relating to incorporate gas companies, are satisfied.

Foul Gas, properly condensed, entering the inlet is, by once only passing through the Scrubber, completely purified from ammonia with regular certainty day by day, without any further trouble, or any other process, effected by a very small quantity of clear water let into the machinery room at the top of the Scrubber, which is discharged at the liquor outlet at the bottom, from Newcastle coal at about 18 to 20 ounces strength, from Yorkshire and other coals generally from 25 to 30 ounces strength; while acidulated litmus or turmeric exposed at the Scrubber outlet will not show the slightest discoloration, and there is not a quarter of a grain of ammonia per 100 feet left unabsorbed.

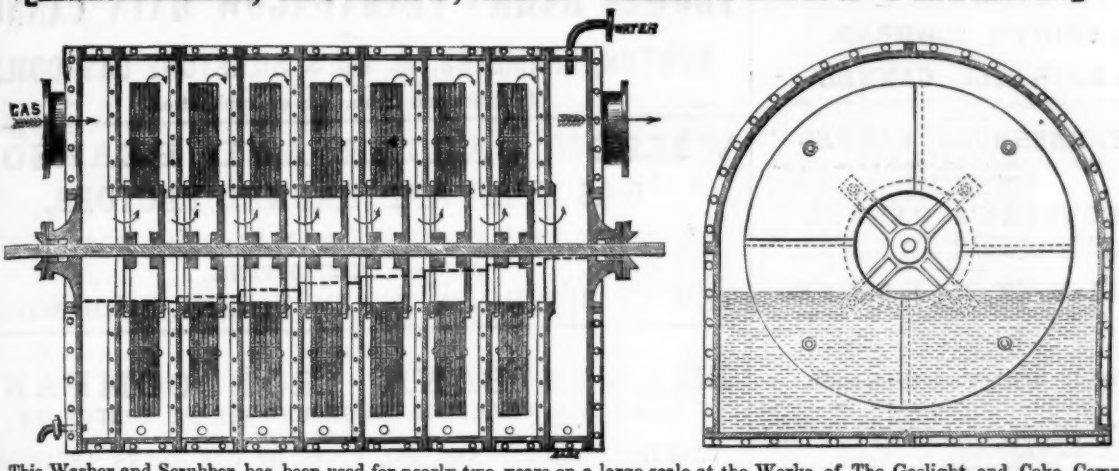
They contain their own engine power, requiring only a small inappreciable quantity of steam from the gas-works boiler, and are then complete in themselves, ready for service.

Applications relating to dimensions and prices should be addressed to us, C. AND W. WALKER, 8, FINSBURY CIRCUS, LONDON, E.C., or to Mr. WILLIAM MANN, late Superintendent of the Chartered Gas-Works, BLACKFRIARS, LONDON; they should state approximately the largest make of gas in 24 hours on a winter's day, and the smallest make on a summer's day, to be purified.

THE

"STANDARD" WASHER & SCRUBBER.

[KIRKHAM, HULETT, AND CHANDLER'S PATENT.]



This Washer and Scrubber has been used for nearly two years on a large scale at the Works of The Gaslight and Coke Company, Bromley-by-Bow, at which station there are now several in operation and in course of construction. There is also one in use at the Pancras Station, King's Cross, of the same Company, which is purifying 1,500,000 cubic feet of gas per day. At the Gas-Works of the Corporation of Leeds, a large one has been erected, which is giving complete satisfaction. The Special Merits of this Washer are as follows:—

That it is a very effective Condenser, so that it is not absolutely necessary to reduce the temperature of the gas to 60°, or thereabouts, to make the Washer effective. That the distribution of the liquor is made with unerring regularity. That it occupies very small space, so that it can be, at little expense, effectually protected from extreme changes of the weather. That the considerable expense of Coke or Wood, or other Scrubbing Material, is entirely saved, and that the great nuisance and cost of from time to time replacing the Scrubbing Material is avoided. That, by the revolution of the discs, the quantity of water carried up by them, and tending continuously to fall, exposes a very large amount of fresh wetted surface to contact with the gas. That it is particularly adapted for Gas-Works where Sulphate of Ammonia is manufactured. That it is much cheaper than any other Scrubber that will do the same amount of work effectually. That it is the only Washer suitable for purifying Gas from all its impurities by solution. That it works with a minimum of pressure. That it takes out every trace of Ammonia from the Gas in once traversing the machine. That it requires very little outlay for foundations.

The following Testimonials show the opinion of eminent Engineers as to the capabilities of the Washer:—

D. HULETT, Esq. *The Gaslight and Coke Company, Bromley-by-Bow, May* 3, 1877.

Dear Sir,—In answer to your inquiries respecting the results of the working of your Patent Washer, I beg to state that I find it a very efficient machine. I have had it in operation for some time, and passed gas through it continuously at the rate of 100,000 cubic feet per hour, and obtained from it 11 gallons of 10 oz. liquor per ton of coal carbonized—results which appear to me very satisfactory for so small a Washer. It works very smoothly, taking but little power, and giving no pressure. I have it still in operation, and am perfectly satisfied with its working.

I am, dear Sir, yours truly, (Signed) W. B. WRIGHT.

Messrs. KIRKHAM, HULETT, and CHANDLER. *The Leeds Corporation Gas-Works, York Street, Leeds, Dec.* 6, 1878.

Gentlemen,—The Scrubber-Washer erected by you at these works, and which has been in use for six months, has proved to be, so far as we have been able to test it, thoroughly efficient. We are at present making 32,000 feet of gas per hour, and are entirely dependent on this apparatus for the removal of Ammonia, and the **Gas is perfectly free from that impurity in the sixth chamber**, so that four chambers remain to deal with an increasing make of gas. Owing to insufficient condensers, the gas was in the summer admitted to the Scrubber at a temperature of 70°, but was reduced therein to 61°, or that of the atmosphere. The volutes are driven at the rate of four revolutions per minute, and, working at that speed, there is not the slightest difference between the inlet and the outlet pressure. Clean water supplied at the rate of 10 gallons per ton of coal carbonized is converted into liquor of from 10 oz. to 13 oz. strength **in once traversing the vessel.** The apparatus is extremely simple and compact, occupies but little space, and requires no foundation. I shall be surprised if it does not eventually become extremely popular.

I am, Gentlemen, yours faithfully, (Signed) HENRY WOODALL, Engineer.

Messrs. KIRKHAM, HULETT, and CHANDLER. *The Gaslight and Coke Company, York Road, King's Cross, Jan.* 14, 1879.

Gentlemen,—In reply to your inquiry, I am pleased to say, the Washer which was put in action at this station in October last **has quite fulfilled my expectations, as it confirms the experiments I made in May last with the smaller machine. Working at four revolutions per minute, it takes out every particle of Ammonia,** while purifying more Gas than it was intended to do. I enclose particulars of a fortnight's working during our heaviest make, by which you will see that it yields the full quantity and strength of liquor, and works with little pressure. I am therefore quite satisfied with the machine, and trust it may meet with the success it deserves.—I remain, &c. (Signed) JOHN CLARK.

The following Table shows the results of the working of one of these Washers, lately erected to purify 60,000 *feet of Gas per Hour, at the St. Pancras Station of The Gaslight and Coke Company:—*

1879.	Nos. of the Divisions and Strength of Liquor in each.										Water used per Ton of Coals.	Gas Purified per Hour, Cubic Feet.	Ammonia on Outlet.	Temperature.			Pressures.		Revolutions per Minute.
	1	2	3	4	5	6	7	8	9	10				Inlet.	Outlet.	Atmosphere.	Inlet, Inches.	Outlet, Inches.	
	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.									
January 1	8½	6½	5	3½	2½	1½	¾	¼	0	0	10 Gallons.	52,000	Nil.	77°	73°	48°	24	23	7½
„ 2	8½	7	6	4½	3½	2½	1½	¾	¼	0	10 „	57,000	Nil.	73°	66°	32°	21½	20½	4
„ 3	9½	8	6	3½	3	2½	1½	¾	¼	0	10 „	60,000	Nil.	75°	68°	40°	23½	22	4
„ 4	9½	7½	6½	4½	3½	2½	1½	¾	¼	0	10 „	65,000	Nil.	74°	69°	33°	24	22½	5
„ 5	9½	7	6	4	3	2½	1½	1	¼	0	10 „	34,000	Nil.	77°	68°	35°	14½	14	3
„ 6	9½	7½	6½	4½	3	2½	1½	1	¼	0	10 „	63,000	Nil.	72°	66°	27°	24	22½	4½
„ 7	11	9	7	5½	3½	3	1½	1¼	¼	0	10 „	59,000	Nil.	74°	66°	31°	25	23½	5
„ 8	9½	7½	6	4½	3	2	1	¾	¼	0	10 „	78,000	Nil.	73°	61°	31°	28	26½	4½
„ 9	11	9	7	5	3½	2½	1½	1	¼	0	10 „	82,000	Nil.	74°	67°	33°	27½	25½	5
„ 10	10½	8½	6½	5	3½	2½	1½	1	¼	0	10 „	66,000	Nil.	76°	64°	28°	28½	27	5
„ 11	12½	10	7½	5½	4½	3½	1½	1½	¼	0	10 „	61,000	Nil.	73°	64°	27°	26½	25½	5
„ 12	11	8½	6½	—	—	—	1¼	¾	¼	0	10 „	39,000	Nil.	74°	64°	27°	26½	25½	5
„ 13	13	10½	8½	6	4½	3½	2	1½	¼	0	10 „	78,000	Nil.	73°	65°	42°	28	26	5

Messrs. KIRKHAM, HULETT, and CHANDLER. *Corporation of Birmingham, Gas Department, Saltley Works, May* 23, 1879.

Gentlemen,—I beg to enclose you a copy of the results of the tests which, by the kind permission of the Engineer, Mr. Clark, I made on the 6th of March last, of the working of one of your "Standard" Washers and Scrubbers at the St. Pancras Station of The Gaslight and Coke Company, and I am of opinion that, for an apparatus occupying so small a space, they are exceedingly satisfactory.—Yours truly, HENRY HACK, Engineer.

Working Results obtained from KIRKHAM, HULETT, *and* CHANDLER'S *Patent "Standard" Washer and Scrubber at the St. Pancras Station of The Gaslight and Coke Company, London, March* 6, 1879.

Gas passing per Hour, Cubic Feet.	—	Impurities in Gas per 100 Cubic Feet.			Temperature.		Pressure in Inches.	Revolution of Apparatus per Minute.	—	No. of Divisions and Strength of Liquor.										Water Used during Experiment. Gallons.
		SH_2	CO_2.	Grains. NH_3.	Washer.	Air.				—	—	—	—	—	—	—	—	—	—	
64,000	Inlet	2·00	2·00	158·8	72	57	21	4½	Twaddel deg. at 60°	5·3	4·9	2·85	2·35	1·7	1·05	0·6	0·3	0·15	0·1	63
	Outlet	1·50	1·50	0·8	68	57	20		Acid, ounces.	11·0	8·4	6·3	4·5	2·7	1·7	1·3	0·7	0·3	—	

WASHER-SCRUBBERS OF THIS PATENT ARE IN COURSE OF CONSTRUCTION FOR BECKTON, BRADFORD, GREENWICH, WOOLWICH, AND SEVERAL OTHER GAS-WORKS.

For further particulars and testimonials, address

Messrs. KIRKHAM & HERSEY, GAS ENGINEERS, 21, ABINGDON STREET, WESTMINSTER.

ROBERT MARSHALL,

CANNEL COAL MERCHANT,

198, ST. VINCENT STREET, GLASGOW.

SHOTT'S BOGHEAD.

HARTHILL CANNEL

Yields 14,920 cubic feet of 40·92-candle gas per ton.

THRASHBUSH CANNEL

12,530 cubic feet of 40·22-candle gas per ton, and 9 cwts. of good coke.

LOTHIAN'S CANNEL

Yields 12,500 cubic feet of 34-candle gas per ton, and 9 cwts. of excellent coke, containing only 4 per cent. of ash.

MUIRKIRK, No. 1, CANNEL

Yields 12,160 cubic feet of 32·5-candle gas per ton, and 10 cwts. of excellent coke, containing only 5 per cent. of ash. This cannel is almost free from sulphur.

OLD WEMYSS CANNEL

Yields 13,320 cubic feet of 32·5-candle gas per ton.

Prices and full analyses on application at above address, or from WEDDERSPOON, FERGUSSON AND Co., 21, Lime Street, LONDON, E.C.

GAS COAL.

THE MIRFIELD COAL COMPANY are supplying GAS COAL of the best quality on trucks at their siding. This Coal contains 10 per cent. of Cannel, and, as analyzed by Mr. James Paterson, of Warrington, yields 12,600 *cubic feet of* 16·67 *candle gas, with* 1430 *lbs. of good Coke, per ton.* Ash in Coke, 1·88.

Apply to the MIRFIELD COLLIERY, Mirfield, NORMANTON. London Agents: SMITH BROS., 38, THROGMORTON ST., E.C.

HEBBURN MAIN GAS COAL.

This Coal is now highly approved of for gas making, and yields over 10,000 feet per ton of 15-candle gas, and about 14 cwt. coke.

For references and prices, either f. o. b. or by rail, apply to

W. RICHARDSON,

29, QUAYSIDE, NEWCASTLE-ON-TYNE.

GAS COAL.

THE Tawd Vale Colliery Company, Limited, are prepared to Contract for the Supply of their superior Arley and other GAS COALS, and to send samples to the order of Gas Engineers and others, or complete analysis on application. Shipped at Liverpool, Preston, Fleetwood, Garston, or Birkenhead.

Mr. James Paterson, C.E., F.G.S., in his analysis of T. V. Arley Coal, says: "Some parts merge into a semi-Cannel; Gas per ton, 10,300 cubic feet; illuminating power, 16·96 candles; coke of high quality, 1431 lbs. per ton."

Collieries, Skelmersdale, near Ormskirk; Offices, 5, New Hall, Old Hall Street, LIVERPOOL.

GAS COAL.

POPE & PEARSON, LIMITED, have now the authority of several of the most eminent Gas Engineers of London in stating that their Coal yields *in practical working over* 10,000 *cubic feet of gas, with an illuminating power of* 16 *candles; or* by the standard burners now used by the London Gas Companies, an illuminating power equal to 17⅛ candles.

One ton yields 12¼ cwt. of good coke. This Coal can be shipped from Hull, Goole, Liverpool, Morecambe, and Barrow.

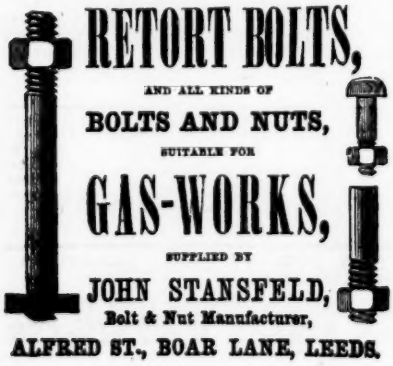
For further particulars, apply to POPE AND PEARSON, LIMITED, West Riding and Silkstone Collieries, near LEEDS.

M. BREMOND'S NAPHTHALINE PROCESS.

All negotiations respecting M. Brémond's patented process for preventing Deposits of

NAPHTHALINE

in Gas Main and Service Pipes should be addressed to Mr. W. H. BENNETT, 22, Great George Street, WESTMINSTER, S.W., or to M. BREMOND, Gas Engineer, Compania Madrilena de Alumbrado y Calefaccion por Gas, MADRID, who may be consulted upon all matters connected with the Gas Industry.



RETORT BOLTS,

AND ALL KINDS OF

BOLTS AND NUTS,

SUITABLE FOR

GAS-WORKS,

SUPPLIED BY

JOHN STANSFELD,

Bolt & Nut Manufacturer,

ALFRED ST., BOAR LANE, LEEDS.

FERRAND DAVIES,

148 GRESHAM HOUSE, OLD BROAD STREET, LONDON, E.C.,

AGENT FOR

THOMAS BARR'S LESMAHAGOW MAIN CANNEL,

AND

NEWTON, CHAMBERS, & CO.'S SILKSTONE GAS COALS.

Analyses and Quotations on application.

WILSON CARTER AND PEARSON,

GAS COAL AND CANNEL FACTORS,

Supply to any Railway Station or for Export all kinds of Fuel for Gas purposes.

Address—CHIEF OFFICES:

TEMPLE BUILDINGS, 50, NEW STREET, BIRMINGHAM.

THE

THAMES BANK IRON COMPANY,

OLD BARGE WHARF, UPPER GROUND STREET, LONDON, S.E.,

SUPPLY FROM STOCK

CAST-IRON RETORTS AND ALL KINDS OF GAS-WORKS APPARATUS,

SOCKET-PIPES FOR GAS OR WATER PURPOSES,

FLANGE-PIPES FOR STEAM,

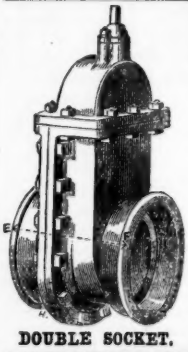
RAIN-WATER PIPES AND GUTTERS,

HOT-WATER BOILERS, PIPES, AND CONNECTIONS,

LAMP-COLUMNS, LAMPS, LAMP-FRAMES, WROUGHT TUBES, &c.,

HOT WATER AND HOT AIR APPARATUS,

Erected complete on the most Improved Principles.



DOUBLE SOCKET.

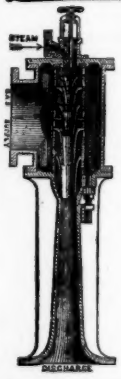
IMPROVED SCREW-VALVES,

For Water, Tar, Ammoniacal Liquor, &c.

MADE EITHER WITH FLANGED OR SOCKET ENDS.

B. DONKIN & Co.

BERMONDSEY, LONDON, S.E.



KÖRTING'S STEAM-JET EXHAUSTER.

IMPROVED CLELAND'S PATENT.

UPWARDS OF 300 IN USE.

CLELAND'S SLOW-SPEED CONDENSER & STEAM SCRUBBER.

FOR PARTICULARS, APPLY TO

KÖRTING BROS.,

17, LANCASTER AVENUE, MANCHESTER,

OR TO

GERALD J. TUPP, Creek Engine-Works, Middle Mall, Hammersmith, London, W.

SOLE AGENT FOR ENGLAND AND WALES.

GEORGE ANDERSON,

GAS AND CONSULTING ENGINEER,

35A, GREAT GEORGE STREET,

WESTMINSTER, S.W.,

PATENTEE and MANUFACTURER of the following Inventions:—

RETORT SETTINGS—giving great Economy of Fuel.

STEAM-ENGINES and EXHAUSTERS, FOUR-WAY VALVES, WASHERS, SCRUBBERS.

FUEL-MACHINE, for Compressing Breeze and Tar.

N.B.—Pamphlet, with Eighteen Illustrations and Letterpress on the Construction of Gas-Works, post free, 2s. 6d.

PRICES AND ALL PARTICULARS TO BE HAD OF THE PATENTEE,

35a, GREAT GEORGE STREET, WESTMINSTER, S.W.

THE SILKSTONE & DODWORTH COAL & IRON COMPANY, LIMITED,

DODWORTH, BARNSLEY.

BENJAMIN WHITWORTH, Esq., M.P. . . . . Chairman.
Mr. RICHARD HARTLEY . . . . . Managing Director.

REAL OLD SILKSTONE GAS COAL.

JAMES PATERSON Esq., Gas Engineer, of the Warrington Gas Company, reported, Aug. 10, 1875:—

"This Coal possesses remarkable qualities as a gas and coking coal, and appears SECOND TO NONE IN THE KINGDOM. It contains the large quantity of 699 lbs. of illuminating matter, and 1498 lbs. of coke to the ton, and produces **12,240** cubic feet of 16·66 candle gas."

The above Company are raising nearly a thousand tons of the Real Old Silkstone Gas Coal per working day.

PRICES QUOTED TO ANY RAILWAY STATION, OR F.O.B. HULL, GRIMSBY, GOOLE, KEADBY, LIVERPOOL, AND FLEETWOOD.

THE

"Gas Engineer's" Diary and Text-Book

FOR 1880.

Price to Subscribers (before issue), 2s. 6d.; Non-Subscribers (after issue), 5s.

PROSPECTUS, WITH TABLE OF CONTENTS AND LIST OF SUBJECTS TO BE TREATED, FORWARDED ON APPLICATION TO THE PUBLISHERS,

JOHN WRIGHT & CO., "GAS ENGINEER'S" OFFICE, 7I, BROAD ST., BIRMINGHAM.

GAS COAL. GAS COAL. GAS COAL.

WELLS, BIRCH, RYDE, and CO., Limited,

HOYLAND SILKSTONE COLLIERIES,

Near BARNSLEY.

This Company is now in a position to raise **2000 tons per day of REAL OLD SILKSTONE GAS COAL.**

"The quality of this Coal for Gas purposes, if equalled, is not excelled by any on record, and the Coke competes successfully with best Durham."—See *Mining Journal*, Aug. 11, 1877.

Prices quoted to any Railway Station, or F.O.B. Hull, Grimsby, Goole, Keadby, Liverpool, and Fleetwood.

Full particulars will be sent on application to above address.

ROBT. DEMPSTER & SONS,

GAS ENGINEERS, IRONFOUNDERS, AND CONTRACTORS,

ROSE MOUNT IRON-WORKS, ELLAND, YORKSHIRE.

MANUFACTURERS OF EVERY DESCRIPTION OF

GAS APPARATUS;

CONTRACTORS FOR THE

ERECTION OF PUBLIC AND PRIVATE GAS-WORKS.

Plans and Specifications Prepared, and Illustrated Catalogues forwarded on application.

SULPHATE AMMONIA.

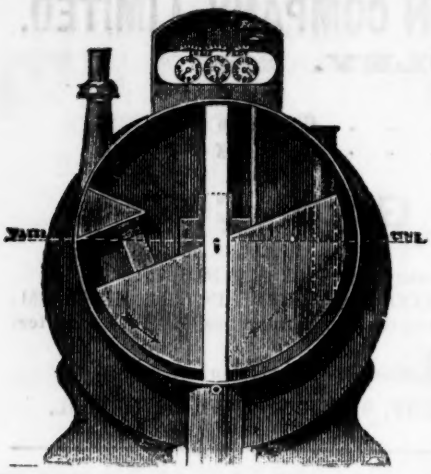
R. W. WALLACE & CO.,

60, MARK LANE, LONDON, E.C.,

Are Buyers of SULPHATE AMMONIA in Large or Small Quantities, or Sell on Commission for Gas Companies and Makers.

PLANT ERECTED ON THE LATEST AND MOST APPROVED PRINCIPLE.

AGENTS to THE GASLIGHT AND COKE COMPANY, LONDON, for the SALE of SULPHAT AMMONIA. Works: BECKTON.



THE

UNVARYING WATER-LINE GAS-METER.

(SANDERS AND DONOVAN'S PATENT.)

"Unquestionably the best Water Gas-Meter now in use."—Thos. G. Barlow, C.E.

Over 120,000 in action.

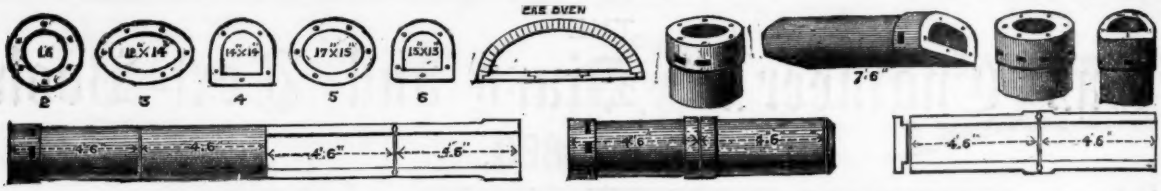
MANUFACTURERS:

THE GAS-METER COMPANY, LIMITED,

KINGSLAND ROAD, LONDON;

WITH

Branch Manufactories at DUBLIN and OLDHAM.



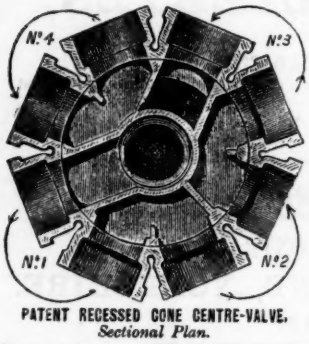
HARRIS & PEARSON, STOURBRIDGE,

Proprietors of Best Clay Mines. Largest makers in the World of Gas-Retorts, Lumps, Tiles, Fire-Bricks, and Fire-Clay Goods of all kinds. 200,000 feet of Gas-Retorts of all Sizes and Patterns in Stock, all in good order. Orders for any Size executed on receipt.

CAST-IRON GAS AND WATER PIPES,

WROUGHT IRON AND LEAD TUBING, GLAZED DRAIN-PIPES,

STAFFORDSHIRE BLUE BRICKS.



PATENT RECESSED CONE CENTRE-VALVE.
Sectional Plan.

R. LAIDLAW AND SON,

EDINBURGH AND GLASGOW,

SOLE MAKERS OF

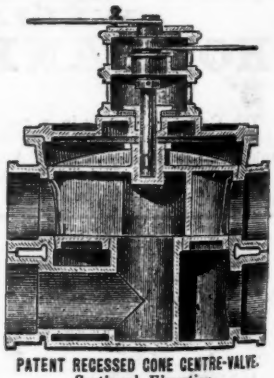
PATENT

RECESSED CONE CENTRE-VALVES,

Constructed on the principle of the ordinary Plug-Cock.

THROUGH-WAY & FOUR-WAY COCKS

Of all descriptions.



PATENT RECESSED CONE CENTRE-VALVE.
Sectional Elevation.

London Office: 6, LITTLE BUSH LANE, CANNON STREET.

D. HULETT & CO.

Invite the attention of Gas Companies, Corporations, and others to their

PATENT STREET LAMPS,

Which are so constructed that neither putty nor other materials are required to secure the glass. No hacking out of old putty, which frequently destroys the frames. A new pane of glass can be inserted in two or three minutes by any inexperienced person, the glass being secured by a hinged flap and turn button.

PRICE, with Opaline Reflecting Top, 12s.; with Fluted Glass Top, 10s. 6d.
Also made EXTRA STOUT recommended for its durability.

D. HULETT'S IMPROVED SERVICE CLEANSER,

By the use of which stoppages in service and other pipes are freed from naphthaline and other obstructions in a few minutes. PRICE 73s. net.

HULETT'S PATENT MERCURIAL REGULATOR,

For inserting in mains, to prevent the excess of pressure in high ground, or other elevated positions.

PATENTEES OF IMPROVED WET AND DRY GAS-METERS.

Makers of all kinds of Pressure-Gauges, Gaseliers, and every kind of Gas-Fittings for the Trade.

GAS HEATING AND COOKING STOVES.

55 and 56, HIGH HOLBORN, LONDON.

London: Printed by Walter King, for the Executors of the late William Boughton King (at the office of Clayton and Co., 17, Bouverie Street, Fleet Street), and published by him at No. 11, Bolt Court, Fleet Street in the City of London.—Tuesday, August 26, 1879.